Service & Parts Manual

C-20F-A-S-B/B-20-S

C SERIES CUBER

C-20-B, C-40-B, C-50-B, C-61-B

ICE-O-MATIC®

A WELBILT Company

CONTRACT DLA400-92-C-5117

NSN 4110-00-837-6441

Contractor Cage 30130

MILE HIGH EQUIPMENT CO.
11100 E. 45TH AVE.
DENVER, COLORADO 80239
(303) 371-3737

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DATE: APRIL 1992

IDENTIFYING TECHNICAL PUBLICATION SHEET

This technical publication is issued for the purpose of identifying and authorizing the following commercial manual for Defense Supply Agency use.

Manufacturer: Mile High Equipment Co., Inc.
11100 E. 45th Ave
Denver, CO 80239
Tel: 303/371-3737

Contract Number: DLA400-92-C-5117

Equipment: Model C-20F-A-S-B/B-20-S

Requisition Number: YPG91210001890

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Title: Service and Parts Manual for ice making machine, cube, model C-20F-A-S-B/B-20-S

Additional copies are available from DGSC.

Refer to attached Approval and Procurement record page (Defense Supply Agency)

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APPROVAL AND PROCUREMENT RECORD PAGE

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PUBLICATION/CONTROL NUMBER: TM-DGSC-4110-721

APPROVAL AUTHORITY: Defense General Supply Center letter dated April 1992

Contract No.	NSN	NO.OF UNITS	MODEL	VOLTAGE/ OTHER ID	MANUALS
DLA400-87-C-0196	4110-01-241-9714	20	C-45H-A-S-B/ B-55-S	220/50/1	45
DLA400-87-C-2133	4110-01-254-9344	52	C-65F-A-S-B/ B-55P-S	220/50/1	109
DLA400-87-M-A012	4110-01-244-0323	20	C-40F-A-P-B	115/60/1	45
DLA400-88-C-1331	4110-00-058-1481	90	C-50F-A-P-B/ B-40-P	120/60/1	191
DLA400-88-C-2095	4110-00-935-1602	61	C-61F-W-S-B/ B-55P-S	230/60/1	127
DLA400-88-C-5247	4110-00-837-6441	446	C-40F-A-P-B/ B-20-P	115/60/1	904
DLA400-89-C-1062	4110-01-047-5491	22	C-25F-A-S-B/ B-40-S	220/50/1	49
DLA400-90-C-0652	4110-01-200-1576	40	C-20F-A-S-B/ B-40-S	115/60/1	80

REMARKS:
None

CERTIFICATION: DATE: JANUARY 30, 1990

It is hereby certified that the DGSC Technical Manual for Ice Machine Cuber Model C-20F-A-S-B/B-20-S to be provided under Contract DLA400-92-C-5117 has been approved by the approval data shown above.

Hank Shaw
Government Sales
Mile High Equipment Co.
11100 E. 45th Avenue
Denver, CO 80239
Mfgr. CAGE Code: 30130

DANGER

ELECTRICAL SHOCK AND/OR INJURY FROM MOVING PARTS INSIDE THIS MACHINE CAN CAUSE SERIOUS INJURY. DISCONNECT ELECTRICAL SUPPLY VOLTAGE TO THE MACHINE PRIOR TO PERFORMING ANY ADJUSTMENTS OR REPAIRS.

READ AND FOLLOW THE INSTRUCTIONS WITHIN THIS MANUAL TO INSURE PROPER FUNCTIONING AND SAFE OPERATION OF THIS MACHINE DURING INSTALLATION, START-UP AND ROUTINE MAINTENANCE OR IF REPAIRS ARE REQUIRED.

SAFETY SUMMARY

GENERAL SAFETY NOTICES

The following general safety notices supplement the specific warnings and cautions appearing elsewhere in this manual. They are recommended precautions that must be understood and applied during operation and maintenance of the equipment covered herein. Should situations arise that are not covered in the general or specific safety precautions, the commanding officer or other authority will issue orders as deemed necessary to cover the situation.

DO NOT REPAIR OR ADJUST ALONE

Under no circumstances should repair or adjustment of energized equipment be attempted alone. The immediate presence of someone capable of rendering aid is required. Before making adjustments, be sure to protect against grounding. If possible, adjustments should be made with one hand, with the other hand free and clear of equipment. Even when power has been removed from equipment circuits, dangerous potentials may still exist due to retention of charges by capacitors. Circuits must be grounded and all capacitors discharged prior to attempting repairs.

TEST EQUIPMENT

Make certain test equipment is in good condition. If a test meter must be held, ground the case of the meter before starting measurement; do not touch live equipment or personnel working on live equipment while holding a test meter. Some types of measuring devices should not be grounded; these devices should not be held when taking measurements.

PLEASE NOTE

1) All references in wiring diagram, schematics or general information use generic model number C-20 instead of specific C-25 model number. All C-20 references apply to C-25 also. The same applies to models C-40/45 and C-60/65.

2) Part numbers in Parts section are Mile High Equipment (Ice-O-Matic) part numbers. Manufacturers Parts number cross references are pages F-14 and F-15.

ENVIRONMENTAL INFORMATION

The ice machine and bin combination is designed for interior application only in a set, non-moveable location. The operating location and utility characteristics are as follows.

- A minimum 5" clearance must be available for the rear and right side for proper condenser air flow and utility connections.
- Ambient air temperature range 10° C thru 40° C.
- Incoming water temperature range 4° C thru 40° C.
- Incoming water pressure range 20 thru 60 P.S.I.G.
- Drain lines for the ice machine and the bin must be separate, well pitched leading to an open or trapped drain which is within 10 feet of the ice machine/bin.

If conditions do not meet these standards the ice machine may not function properly. In this case the environmental conditions must be adjusted, for air or water temperature variances, or a water pressure regulating valve must be installed, for water pressure variances.

CRATED STORAGE INSTRUCTIONS

The ice machine and storage bin are to be stored in an environment as follows:

- Interior or protected storage only.
- Ambient air temperature range of -10° C thru 40° C.
- Must be stored in upright position.

SPECIAL TOOLS OR EQUIPMENT REQUIRED

The only tools necessary for uncrating, installation and set up are standard hand tools such as but not limited to, large screwdriver, regular and Phillips head screwdriver and standard wrenches. Maintenance and/or service requires standard hand tools plus the following standard refrigeration tools:

- Refrigerant gauge set for checking operating pressures.
- Volt/OHM meter to check electrical continuity.
- Dial-A-Charge.
- Vacuum pump.
- Oxy/Acetylene torch.

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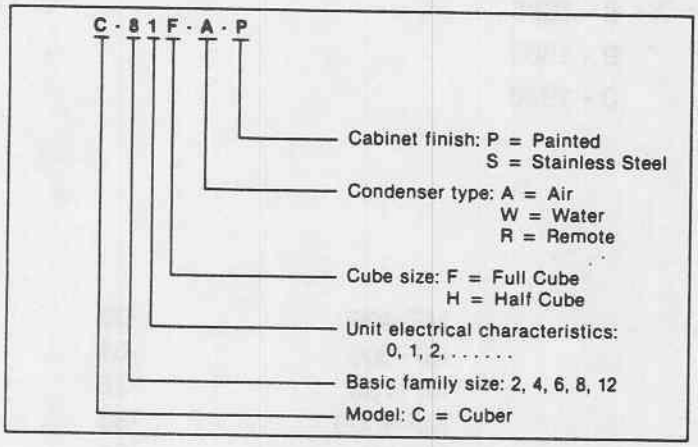
ICE-O-MATIC
A WELBILT Company

MODEL NUMBERING SYSTEM

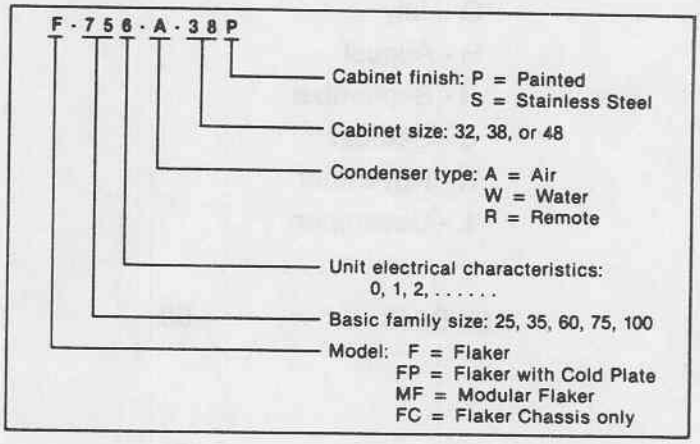
The Model Number fully describes the unit. A letter code identifies the model series. A two or three digit number identifies the basic family size and electrical characteristics. A second letter code identifies the type of condenser. Cabinet size is identified by a two digit number. Finish is identified by a letter code.

The following examples illustrate how Model Numbers are developed:

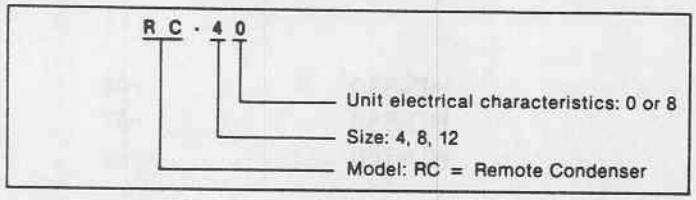
CUBERS


C-81F-A-P
Cabinet finish: P = Painted
S = Stainless Steel
Condenser type: A = Air
W = Water
R = Remote
Cube size: F = Full Cube
H = Half Cube
Unit electrical characteristics:
0, 1, 2, ...
Basic family size: 2, 4, 6, 8, 12
Model: C = Cuber

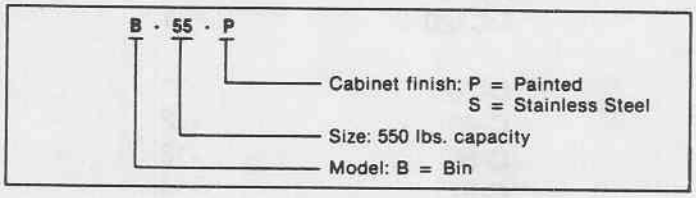
FLAKERS


F-756-A-38P
Cabinet finish: P = Painted
S = Stainless Steel
Cabinet size: 32, 38, or 48
Condenser type: A = Air
W = Water
R = Remote
Unit electrical characteristics:
0, 1, 2, ...
Basic family size: 25, 35, 60, 75, 100
Model: F = Flaker
FP = Flaker with Cold Plate
MF = Modular Flaker
FC = Flaker Chassis only

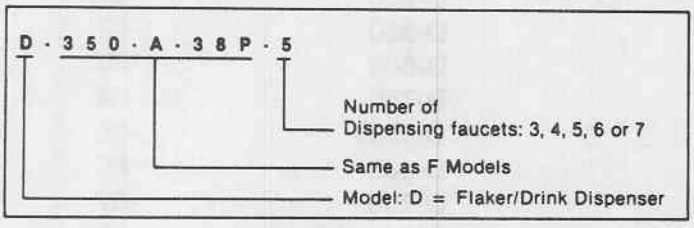
REMOTE CONDENSERS



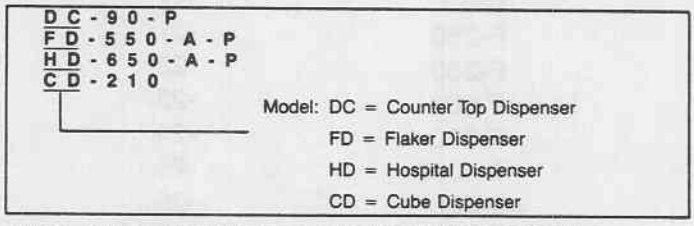
BINS



FLAKER/DRINK DISPENSERS



DISPENSERS



Other model nomenclature same as Flaker or Cuber nomenclature.

Electrical characteristics of all units are coded in the Model Number by a one digit number appearing after the basic family size. The code is as follows:

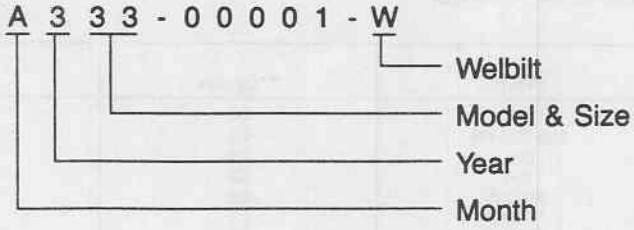
Code Number	*Volts	**Cycles	Phase	No. of Service Wires Required
0	115	60	1	3
1	208-230/115	60	1	4
2	208	60	1	2
3	230	60	1	2
4	230/115	60	3	4
5	230	50	1	2
6	208-230	60	1	2
7	208-230	60	3	3
8	208-230	50-60	1	2

*Two voltage values separated by a hyphen (-) means that the unit is capable of operating over this voltage range.
Two voltage values separated by a slant line(/) means that both voltages must be supplied at the installation. This is usually done by a neutral wire.
**Two cycle values separated by a hyphen (-) means that the unit is capable of operating at either cycle value.

SERIAL NUMBER FORMAT

A - January	
B - February	3 - 1983
C - March	4 - 1984
D - April	5 - 1985
E - May	6 - 1986
F - June	7 - 1987
G - July	8 - 1988
H - August	9 - 1989
I - September	0 - 1990
J - October	
K - November	
L - December	

ALL BINS	-00
RC40	-01
RC60	-02
RC80	-03
RC120	-04
C-20	-11
C-40	-12
C-60	-13
C-81	-14
C-121	-15
C-10	-16
C-50	-17
F-250	-21
F-350	-22
F-600	-23
F-750	-24
F-1000	-25
F-400	-26
F-700	-27
MF-400	-30
MF-600	-31
MF-750	-32
MF-1000	-33
MF-2500	-34
MF-5000	-35
MF-700	-36
HD-350	-41
HD-650	-42
HD-750	-43
FD-550	-51
D-250	-61
D-350	-62
D-600	-63
D-750	-64
D-1000	-65
D-400	-66
D-700	-67
DX (used)	-99



FOREWORD

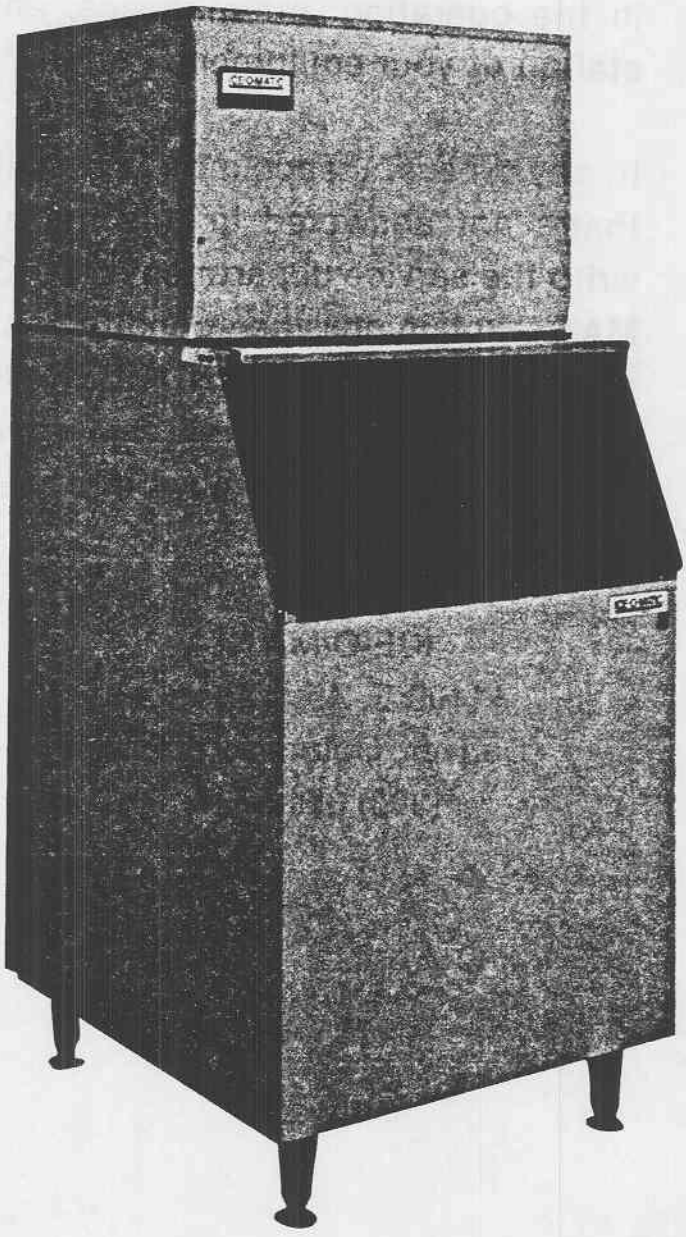
We, ICE-O-MATIC, present this service manual to aid the service men and users in the operation, maintenance, and installation of your equipment.

If, at any time, you encounter conditions that are not answered in this manual, write to the service department of ICE-O-MATIC explaining the conditions in detail, giving THE MODEL NUMBER AND SERIAL NUMBER of the unit, and we will give your questions our immediate attention and reply.

ICE-O-MATIC
11100 E. 45th Avenue
Denver, Colorado 80239
(303) 371-3737

ICE-O-MATIC®

A **WELBILT** Company

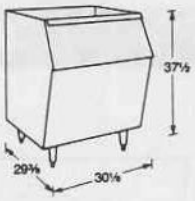


MODEL

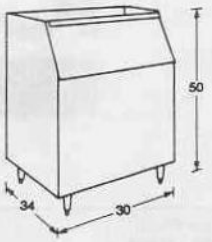
C-20, C-40, C-50, C-61

SPECIFIC INSTALLATION INSTRUCTIONS
CONNECTION DIAGRAMS

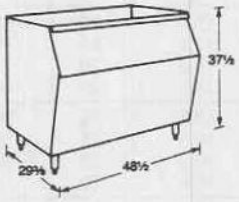
B-20
170 lb. Bin



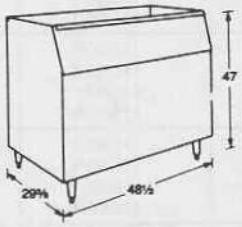
B-40
365 lb. Bin



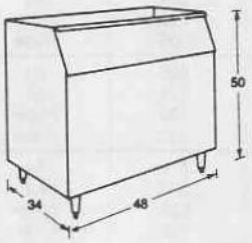
B-55
550 lb. Bin



B-60
580 lb. Bin

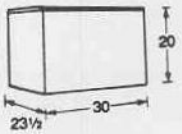


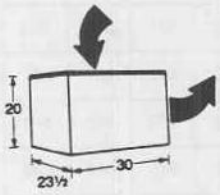
B-80
800 lb. Bin



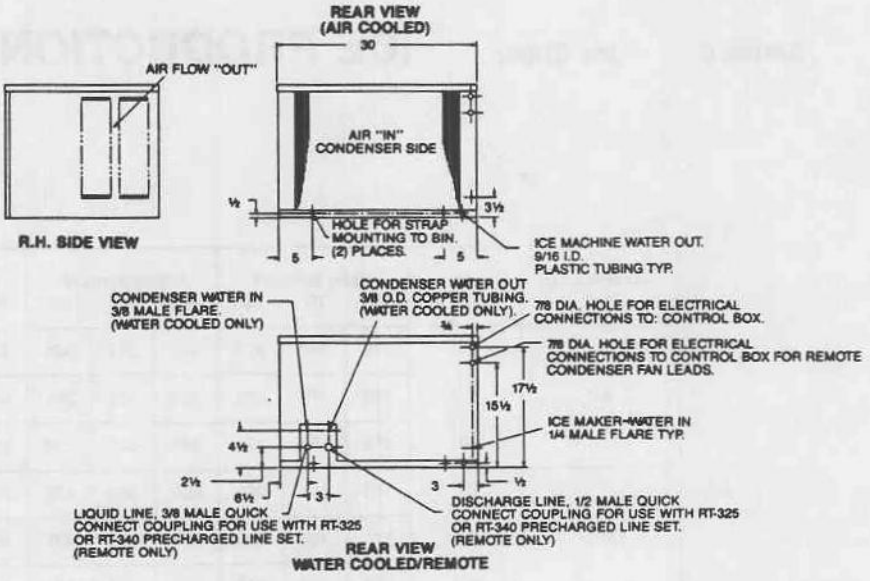
B-100
1000 lb. Bin

DIMENSIONS (Inches) & PLUMBING/ELECTRICAL DIAGRAM:





Air Circulation Pattern
(Air Cooled Models)



ELECTRICAL AND MECHANICAL SPECIFICATIONS

ICE-O-MATIC®

A WELBILT Company

Model Number	Ice Prod. Lbs./24 hrs. @ 70° Air 50° Water	Condensing Unit	Comp. H.P.	Voltage Characteristics	No. of Wires	Operating Amps @ Rated Voltage	Max. Fuse Size	Refrigerant	
								Type	Charge
C-20F-A-P-B	207	Air	1/3	115/60/1	3	11.3	15	R-12	18 oz.
C-20H-A-P-B	207	Air	1/3	115/60/1	3	11.3	15	R-12	18 oz.
C-20F-W-P-B	209	Water	1/3	115/60/1	3	10.6	15	R-12	12 oz.
C-20H-W-P-B	209	Water	1/3	115/60/1	3	10.6	15	R-12	12 oz.
C-40F-A-P-B	405	Air	1/2	115/60/1	3	15.1	20	R-12	23 oz.
C-40H-A-P-B	405	Air	1/2	115/60/1	3	15.1	20	R-12	23 oz.
C-40F-W-P-B	432	Water	1/2	115/60/1	3	14.0	20	R-12	18 oz.
C-40H-W-P-B	432	Water	1/2	115/60/1	3	14.0	20	R-12	18 oz.
C-50F-A-P-B	572	Air	3/4	115/60/1	3	12.3	25	R-502	28 oz.
C-50H-A-P-B	572	Air	3/4	115/60/1	3	12.3	25	R-502	28 oz.
C-50H-W-P-B	602	Water	3/4	115/60/1	3	10.9	20	R-502	18 oz.
C-50F-W-P-B	602	Water	3/4	115/60/1	3	10.9	20	R-502	18 oz.
C-61F-A-P-B	636	Air	3/4	208-230/115/60/1	4	15.4	20	R-502	28 oz.
C-61H-A-P-B	636	Air	3/4	208-230/115/60/1	4	15.4	20	R-502	28 oz.
C-61F-W-P-B	640	Water	3/4	208-230/115/60/1	4	8.7	15	R-502	18 oz.
C-61H-W-P-B	640	Water	3/4	208-230/115/60/1	4	8.7	15	R-502	18 oz.

Series C **Ice Cuber**

ICE PRODUCTION CHARTS

Condensing Unit	Air Temp. °F	Water Temp. °F 80°	70°	50°	Water Temp. °F 80°	70°	50°	Water Temp. °F 80°	70°	50°	Water Temp. ° 80°	70°	50°
Air	70°	179	188	207	346	374	405	474	499	572	537	550	636
	80°	162	170	188	322	351	381	427	439	508	490	503	587
	90°	145	164	171	300	327	358	379	408	458	443	455	541
Water	70°	173	184	209	359	383	432	480	525	602	540	566	640
	80°	171	183	208	357	383	431	467	510	600	534	561	635
	90°	169	197	206	355	382	431	454	504	583	527	556	630
Model Number		C-20			C-40			C-50			C-61		

INSTALLATION

A. Uncrating & Inspection Procedures

1. Inspect exterior of shipping carton and skid for any signs of shipping damage.
2. Using a pry bar or large screwdriver, remove all staples from bottom of carton. Do not pry against carton.
3. Lift carton straight up, entirely off machine. Do not discard carton until satisfactory inspection of machine is complete.
4. Inspect machine cabinet for any signs of shipping damage.
5. Remove top, front, left and right hand side panels for access to skid attachment bolts. With panels removed, inspect machine for damaged refrigeration lines and any other signs of shipping damage. On air cooled machines, make certain that fan blade(s) turn freely. Should any damage be noted, follow Freight Claim Procedures on page B2.
6. Remove the four skid bolts. Lift machine off skid and place on bin.
7. Securely attach machine to bin using the supplied attachment straps and hardware located on the rear of the machine and bin.
8. Remove tape from splash curtain(s).
9. Fill out and return Quality Control card to factory.

FREIGHT CLAIM PROCEDURES

IMPORTANT

THIS MERCHANDISE HAS BEEN CAREFULLY INSPECTED AND PACKED IN ACCORDANCE WITH THE CARRIER'S PACKING SPECIFICATIONS. RESPONSIBILITY FOR SAFE DELIVERY HAS BEEN ASSUMED BY THE CARRIER. IF LOSS OR DAMAGE OCCURS, YOU AS CONSIGNEE MUST FILE A CLAIM WITH THE CARRIER, AND HOLD CONTAINER FOR CARRIER'S INSPECTION.

CONCEALED LOSS OR DAMAGE

IF LOSS OR DAMAGE DOES NOT APPEAR UNTIL MERCHANDISE HAS BEEN UNPACKED MAKE A WRITTEN REQUEST FOR INSPECTION BY THE CARRIER WITHIN 15 DAYS OF THE DELIVERY DATE. THEN FILE A CLAIM WITH THE CARRIER.

DO NOT RETURN DAMAGED MERCHANDISE TO US WITHOUT WRITTEN PERMISSION. INSPECT PROMPTLY AND FILE CLAIM WITHOUT DELAY.

VISIBLE LOSS OR DAMAGE

ANY EXTERNAL EVIDENCE OF LOSS OR DAMAGE MUST BE FULLY DESCRIBED AND NOTED ON YOUR FREIGHT BILL OR EXPRESS RECEIPT AND SIGNED BY THE CARRIER'S AGENT. CLAIM SHOULD THEN BE FILED ON A FORM AVAILABLE FROM THE CARRIER ON REQUEST.

DO NOT RETURN DAMAGED MERCHANDISE TO ICE-O-MATIC

FILE YOUR CLAIM AS ABOVE

ICE-O-MATIC
ICE CUBE MACHINE
GENERAL DESCRIPTION

ICE-O-MATIC®

A WELBILT Company

During the freezing cycle water is circulated over the evaporator freezing plate where the ice cubes are formed. When the low side has pulled down to 13 p.s.i. on C-20, C-40, and 30 p.s.i. on C-50 and C-61, the low pressure control contacts close energizing the time delay module. The timer is preset at the factory to achieve a ⅛" bridge thickness on the C-20, C-40, C-50, and C-61. It may be necessary to readjust at the time of start-up for proper thickness.

There are two steps to the freeze cycle. The time it takes for the low side pressure to pull down to 13 p.s.i. on the C-20, C-40, and 30 p.s.i. on C-50, C-61, and also the time delay setting to build the bridge across the front of ice slab (⅛" thick for proper harvest). The time it takes to achieve the thickness of this bridge depends on surrounding air and incoming water temperatures.

Once the time mechanism in the time delay has finished timing, power is supplied to the (#1) relay coil (see wiring diagram). This change supplies power to the hot gas solenoid valve, water purge valve, and the harvest probe assist motor. The water purge valve opens, and allows the water pump to purge the water from the water tank, removing all impurities and sediment from the tank. This allows the unit to make clear ice cubes, and keep mineral build-up at a minimum in the water system.

The hot gas solenoid opens allowing hot gas to go directly to the evaporator, breaking the bond between the evaporator and the slab of ice for harvesting. Once the evaporator has reached approximately 40°F in temperature, the harvest probe assist motor overcomes the bonding of the ice to the evaporator, and releases the slab of ice off of the evaporator and into the bin.

As the harvest probe assist motor turns, it activates a cam switch which is riding on the outside edge of the cam. The cam is driven by the harvest probe assist motor. When the cam switch goes from the normally closed position, to the normally open position, it resets the timer to allow the machine to go back into another freeze cycle after the harvest probe assist motor has made a complete rotation. If the ice level in the storage bin is high enough to hold the splash curtain forward the bin control switch opens. When the cam switch reaches the high side of the cam, with the bin switch open, the machine will shut off, and will not start until some ice is removed from the storage bin.

OPERATION

Start-up Descriptions and Procedure

1. Check position: of ICE/OFF/WASH selector switch and test purge function (Step C).

   a. ICE Position: If the bin is not full, all ice-making components will turn on and the machine will begin a freeze cycle.

      If the bin is full, and the bin switches are OPEN, all components will be turned off. The components will remain off until the bin switches CLOSE, then the unit will begin a freeze cycle. Ice making cycles will continue until the bin becomes full or the selector switch is moved to either the OFF or WASH position.

   b. OFF Position: Entire machine and all components will be off when selector switch is in this position.

   c. WASH Position: All machine components will be off except the water pump. The water pump will remain on until the selector switch is moved to either the OFF or ICE position. At this time the purge function can be tested by depressing and holding down the purge switch. The purge valve will open allowing all water in the water trough to be removed by the water pump.

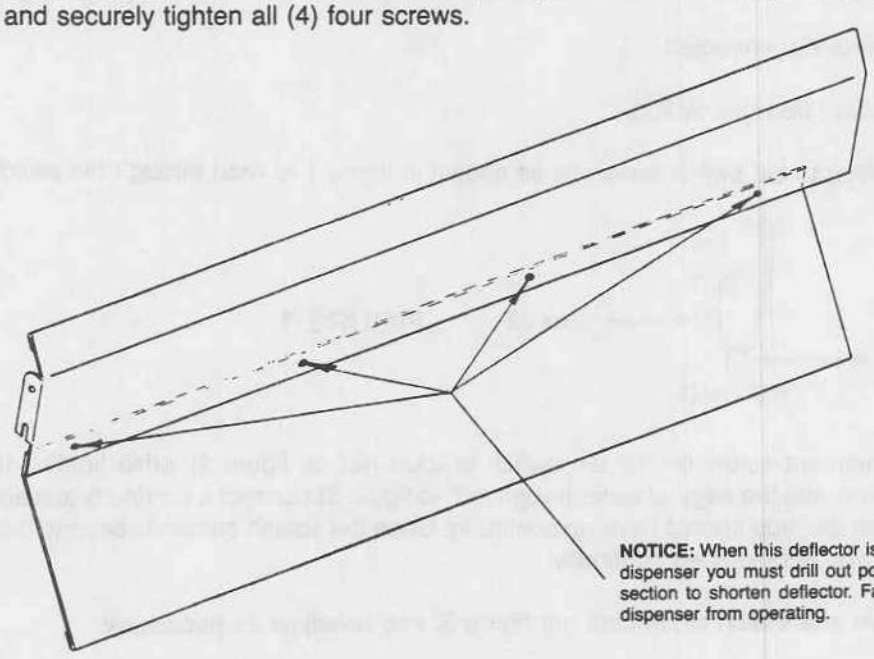
      NOTE: If suction line temperature is above 80° the high temp. safety control will be open. This will prevent the water pump from running. The suction line must reach 45° to close the high temp. safety control and start the water pump.

2. Move selector switch to ICE position for initial freeze cycle.

3. Observe first slabs of ice for proper ⅛" bridge thickness. If adjustments are necessary, follow procedures on page C-2.

GENERAL SERVICE INFORMATION
ICE DEFLECTOR INSTALLATION

1. Complete installation of the ice machine per the General Installation Instructions.
2. Locate the (4) four threaded inserts, (2) two on the L.H. front, lower side panel and (2) two on the R.H. front, lower side panel. Refer to figure 1.
3. Install screws into each lower hole. (Note: leave these screws loose).
4. Install the 'ice deflector' over these screws as per figure 2. Install the (2) two screws in the top mounting holes and securely tighten all (4) four screws.



NOTICE: When this deflector is used on any kind of cube dispenser you must drill out pop rivets and remove lower section to shorten deflector. Failure to do so will prevent dispenser from operating.

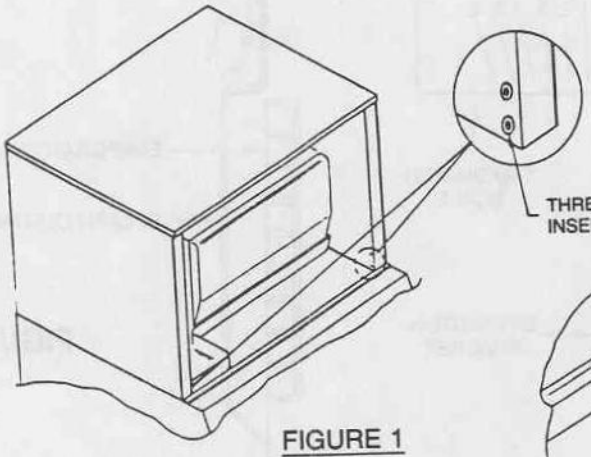


FIGURE 1

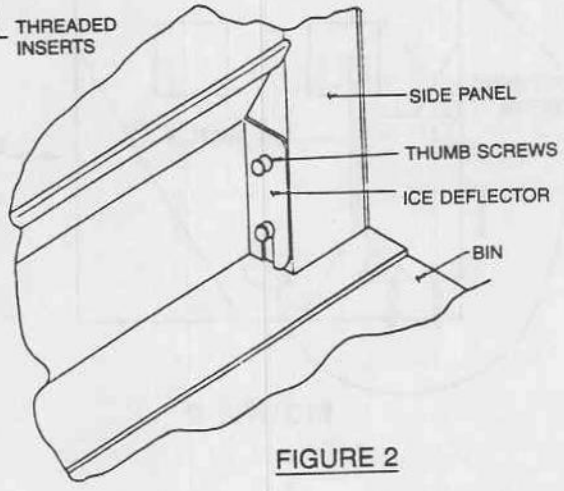


FIGURE 2

GENERAL SERVICE INFORMATION
BIN SWITCH ADJUSTMENT

Check bin control for proper operation.

The bin control is a mechanical switch that is actuated by the opening of the splash curtain. When the curtain is opened for more than 10 seconds at the end of the freeze cycle, the switch is actuated, all machine components except the controller should turn off and stay off until the curtain can close to its original position. Machine should now resume normal operation.

If adjustments are necessary, follow procedure below.

a. Make sure power is disconnected.

b. Disconnect one lead from bin switch.

c. Connect ohm meter to bin switch terminals as shown in figure 1 to read through bin switch.

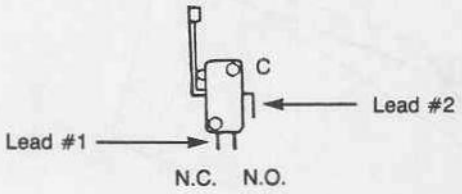


FIGURE 1

d. Loosen the adjustment screw on the bin switch bracket (ref. to figure 2) while holding the evaporator splash curtain even with the edge of water trough (ref. to figure 3) connect a continuity test across terminals N.C. and C. terminals, you should have no continuity. Once the splash curtain is beyond the outside edge of water trough, you should have continuity.

e. Check the curtain and switch movement per figure 3, and re-adjust as necessary.

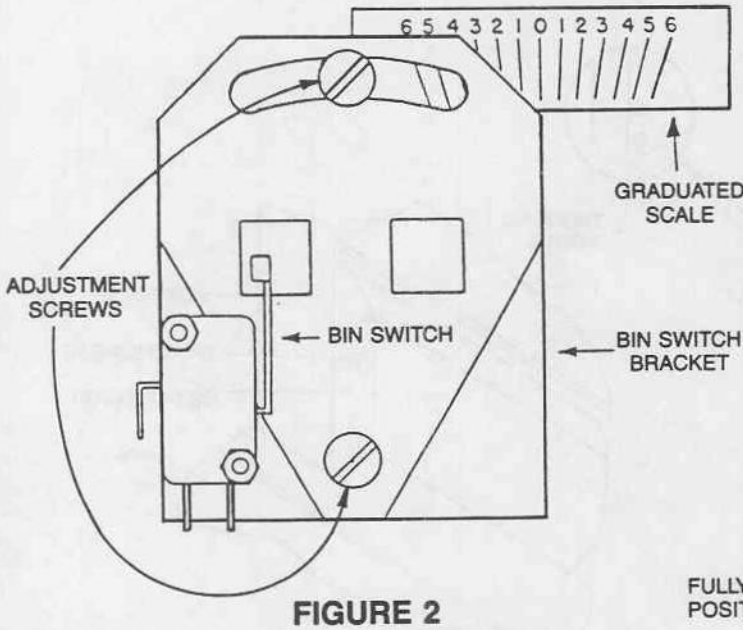


FIGURE 2

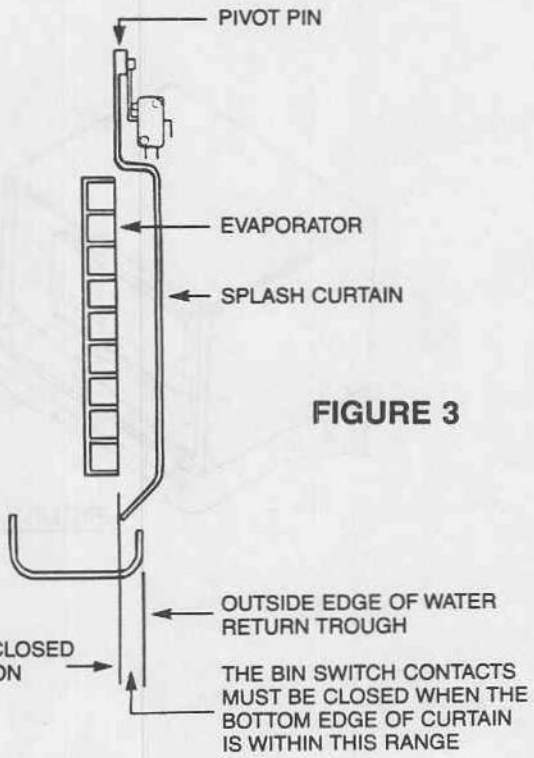
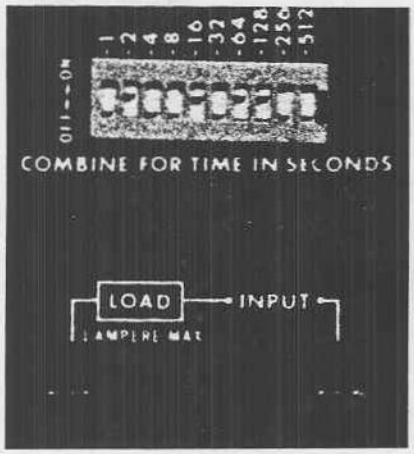

PIVOT PIN
EVAPORATOR
SPLASH CURTAIN
OUTSIDE EDGE OF WATER RETURN TROUGH
FULLY CLOSED POSITION
THE BIN SWITCH CONTACTS MUST BE CLOSED WHEN THE BOTTOM EDGE OF CURTAIN IS WITHIN THIS RANGE

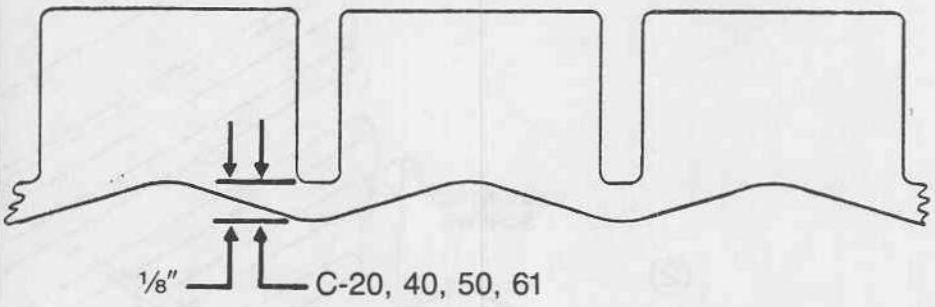
FIGURE 3

GENERAL SERVICE INFORMATION
TIMER—ICE THICKNESS ADJUSTMENT

TIMER ADJUSTMENT

To change timer settings — By moving the switch next to the number to an "ON" position (note the ON-OFF marking on the timer) that number is activated. The numbers indicate seconds. To determine total time delay add up the numbers turned to the ON position.





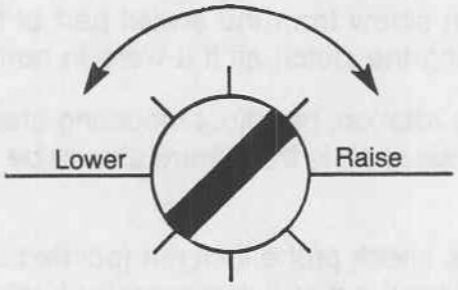
Proper Bridge thickness

CHANGING ICE BRIDGE THICKNESS

The ice bridge thickness is controlled by the solid state timer. To increase the bridge thickness, increase the timer setting. To decrease the bridge thickness, decrease the timer setting.

TIMER INITIATE CONTROL ADJUSTMENT

Timer Initiate Control



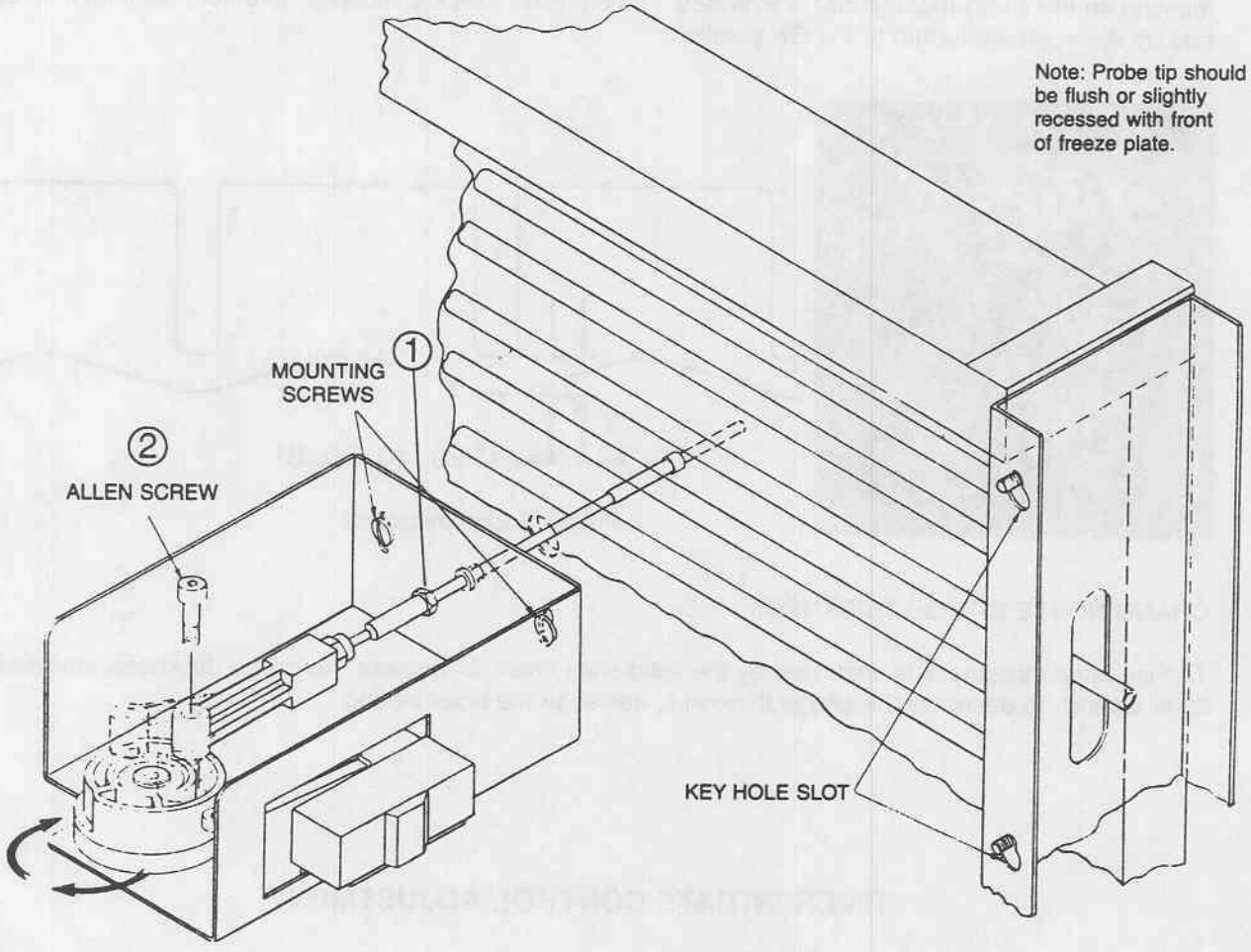
Cut-In
Pressure

ADJUSTMENT

The proper cut-in pressure on C-20, C-40 is 13 p.s.i.g. and C-50, C-61 is 30 p.s.i.g. To lower cut-in pressure turn adjustment screw counter-clockwise. To raise cut-in pressure turn adjustment screw clockwise.

GENERAL SERVICE INFORMATION

PROBE ALIGNMENT



It is possible for the evaporator to shift in transit. It is recommended to check alignment of the probe at the time of installation. This should be done as follows:

1. At this time remove allen screw from the swivel part of the probe shaft. Rotate by hand in direction of arrow following the clutch as if it were in normal operation.

If there is any binding during rotation, re-adjust mounting bracket by loosening mounting screws on the assembly bracket, once shaft is free (there should be no drag at all), re-tighten mounting screws.

NOTE: When aligning probe, check probe lock nut (pointed out by arrow marked ①) is tight and that tip of probe does not extend out of the evaporator bushing into the freezing surface of the evaporator.

Also check probe clutch allen screw in stainless steel portion of clutch (pointed out by an arrow marked ②) to insure it's tight against the flat portion of the harvest motor drive shaft.

GENERAL SERVICE INFORMATION
SERVICE HELP & ADJUSTMENTS

DANGER: Electrical shock and/or injury from moving parts inside this machine can cause serious injury. Disconnect electrical supply voltage to machine prior to performing any adjustments or repairs.

1. As previously stated, the length of time to complete an Ice Making Cycle is dependent on the room and inlet water temperature.

2. Cam Switch is actuated by the driver cam. If necessary to adjust the micro switch, rotate the cam, adjustment is made by bending switch arm.

3. Bin Control — The bin control is a mechanical switch, which is activated by the arm on the splash curtain. The switch should be adjusted so that the switch closes to turn the machine on when the splash curtain returns to just beyond the outer edge of the water return trough. This adjustment is made by loosening the mounting screws that hold the bin switch in place. See drawing page C-2 for adjustment. Access to the switch adjustment is by removing the right hand side panel.

4. Timer Initiate Control — Energizes the solid-state timer. This control closes at 13 p.s.i. on C-20, C-40, and 30 p.s.i. on C-50, C-61. **NOTE:** All B-series cubers manufactured before December 1, 1986 used a thermostatic timer initiate control.

5. Timer/Bridge Thickness — The timer is located in the control box. To change settings — By moving the switch next to the number to an "ON" position (note the On-Off marking on the timer) that number is activated. The numbers indicate seconds. To determine total time delay add up the number turned to the ON position. To increase the bridge thickness add time. To decrease bridge thickness subtract time. See page 12 for diagram.

6. Fan control — C-40 — Air Cooled Only — non-adjustable. The fan cycles on at 125 p.s.i.g. and off at 100 p.s.i.g.

7. #1 Relay — Located in control box. When energized it supplies power to hot gas valve, water purge valve and probe assist motor during defrost cycle.

8. Finishing #2 Relay — Identified as #2 relay on wiring diagram. This relay locks out the bin control during the freeze cycle in the event the bin control contacts open until the machine has harvested to prevent shutting off with ice in the evaporator.

9. On-Off Switch is a three position switch located on the front of the control box. Power is supplied to the machine when the switch is in the forward (ICE) position. With the switch in the WASH position, power is supplied to the pump only, for cleaning purposes. The center position (OFF) shuts the machine off completely.

10. Water Purge Switch is located next to the on/off switch. By depressing the purge switch, with selector switch in the ice or wash position, it opens the water purge solenoid valve and completely empties the water tank. This switch is used after cleaning the ice machine to flush the ice machine cleaning solution out of the water reservoir to the drain.

GENERAL SERVICE INFORMATION
(continued)

11. High Pressure Control — On all C-20, C-40, C-50, C-61 water cooled and remote. This control turns machine off if water supply to the water cooled condenser (water cooled only) is interrupted. The control is pre-set at the factory and is non-adjustable. Cut-out pressure is set at 250 p.s.i. on C-20 and C-40; 400 p.s.i. on C-50 and C-61. High Pressure reset button is located between control box and evaporator on back wall (red button). This is a manual re-set control. The head pressure on the water cooled models should be set as follows: C-20, C-40 set at 125 p.s.i. and C-50, C-61 set at 225 p.s.i.

12. Probe Assist Motor — is a slip clutch type motor. When the clutch pressure can overcome the capillary attraction of the ice to the evaporator plate the probe assist motor pushes the ice slab out of the evaporator and into the bin. There are no adjustments to be made to the clutch portion of this assembly. The length of the probe shaft is adjustable; it is set at the factory. If it is necessary to adjust the length of this shaft, it can be done by loosening the nut on the shaft, and threading the shaft in, or out of the coupler in which it is inserted. For proper adjustment, plastic probe tip in the freeze cycle position should be 1/32 of an inch back into the bushing it rides on, so it does not become frozen into the ice. Also see probe alignment on page C-4.

13. High Temperature Safety Switch — Located on suction line — Installed on all models. If the suction line temperature exceeds 80°F during defrost, this B-Metal switch opens and returns the machine to a freeze cycle by interrupting power to the hot gas solenoid.

MAINTENANCE INFORMATION

ICE-O-MATIC®

A WELBILT Company

MAINTENANCE PROCEDURE

To insure economical, trouble-free operation of your machine, it is recommended that the following instructions be followed every 3 months.

1. Check the Cam Switch Setting.
2. Check to see that the T. X. Valve Bulb is securely fastened.
3. Check for leaks of any kind, water refrigerant, oil, etc.
4. Check the Bin Control, it should shut the machine off. See bin control adjustment on page 9.
5. Check all electrical connections.
6. Clean the condenser to insure air passage across the fins.
7. Clean the system out with Ice Machine Cleaner. (See Cleaning Procedure, page C-8.) NOTE: It may be necessary to clean the machine more often due to local water conditions.

WINTERIZING PROCEDURE

1. Shut the water off to the machine.
2. Turn the On-Off Switch on the Control box to the "OFF" position.
3. Let the machine stand for one hour (or as long as necessary to melt all the ice out of the evaporator freeze plate.
4. Disconnect the tubing between the pump discharge and the water distributor manifold.
5. Drain complete system. Do not replace the tubes.
6. On water cooled machines, blow condenser completely dry.
7. Wipe out the storage bin.

DANGER: Electrical shock and/or injury from moving parts inside this machine can cause serious injury. Disconnect electrical supply voltage to machine prior to performing any adjustments or repairs.

CLEANING PROCEDURES

ICE-O-MATIC®

A WELBILT Company

1. Turn main electrical service switch to the ice maker "OFF."
2. Remove front panel, and turn the ON/OFF/WASH switch to the "OFF" position.
3. Remove all ice from the ice bin.
4. Depress float valve and allow tap water to fill water tank.
5. Add one (4) ounces of an approved liquid ice machine cleaner to water tank. Do not use nickel safe ice machine cleaner.
6. Turn ON/OFF/WASH switch to the "WASH" position and re-install panel (safety precaution).
7. Allow the solution to circulate (30 minutes).
8. Repeat Step 1 and see that all visible deposits are removed from the evaporator. If not, repeat Steps 4 through 7.
9. If necessary, remove the water distribution tube assembly. Use a brush to remove any scale buildup inside either the inner or outer tube. Please refer to page D-7 for assembly and dis-assembly.
10. Push purge valve switch with ON/OF/WASH switch in "WASH" position. This will flush ice machine cleaner out through drain. Allow pump reservoir to fill with fresh water.
11. Repeat Step 1 and wipe out any scale deposits in the water tank.
12. Re-install the water distributor tube and wipe down all areas of the ice machine head and pan area with a sanitizing solution.
13. Wipe out the ice storage bin with warm, soapy water; rinse and sanitize.
14. Turn ON/OFF/WASH switch to the "ON" position and replace front panel.
15. Discard the first two batches of cubes.

NOTE: If above cleaning procedures are not performed every six (6) months, harvest problems may occur.

GENERAL SERVICE INFORMATION
SERVICE DIAGNOSIS

Condition	Possible Cause or Remedy
1. Unit runs but no ice production.	a. Water shut off.
	b. Hot gas valve defective.
	c. Unit out of gas.
	d. Motor compressor not pumping.
	e. ON/OFF/ON switch on "WASH" position.
	f. Refrigerant drier plugged.
	g. TX valve defective.
	h. Defective probe assist motor.
	i. Cam switch defective or not tripping.
	j. Water pump defective.
	k. Timer initiate thermostat not closing.
	l. Defective timer.
	m. High Temperature Safety Switch defective, stuck in the open position.
2. Low ice production.	a. Dirty condenser.
	b. Low line voltage.
	c. Valves in compressor not functioning properly.
	d. Refrigeration system under or over charged.
	e. Leak in water circulating system.
	f. Hot gas valve not seating properly.
	g. Evaporator in need of cleaning.
3. Dimples in ice too large.	a. Defective timer initiate thermostat.
	b. Timer not properly set (see page C-3).
	c. Problem with refrigerant feed. (Low on charge, T.X. valve defective, dirty condenser, etc.)
4. Cloudy ice.	a. Water system in need of cleaning.
	b. Water pump not pumping properly.
	c. Purge drain plugged up.
	d. Purge valve not opening.
5. Machine fails to shut off when bin is full.	a. Bin control defective or out of adjustment. (Replace) See page C-2.
6. Machine is noisy.	a. Defective compressor.
	b. Loose components.
	c. Fan hitting shroud.
	d. Defective purge valve.

Condition	Possible Cause or Remedy
7. Probe assist motor runs continuously.	a. Cam switch defective or needs adjustment. b. Timer contacts stuck in closed position.
8. Machine will not go into harvest cycle.	a. Defective hot gas solenoid. b. Defective probe assist motor. c. Defective timer initiate thermostat. d. Defective timer. e. Defective high temperature safety switch.
9. Machine in defrost too long.	a. System low on refrigerant. b. Defective probe assist motor. c. Head pressure setting too low. d. Probe assist assembly needs adjustment. See page C-4.
10. Compressor cuts out on overload.	a. Low line voltage. It should be within 10% of rated voltage. b. High head pressure. Dirty condenser. c. Defective compressor unit, starting capacitor relay or overload device. d. Loose electrical connection, probably in compressor junction box.
11. Motor compressor runs but condenser fan does not.	a. Loose electrical connections. b. Fan blade cannot turn due to obstruction. c. Motor burned out. d. Fan control inoperative.
12. Machine not operating at all.	a. Check voltage supply. b. Check ON/OFF switch. c. Check bin control with continuity tester. d. Check for loose connections. e. Defective wiring harness. f. Defective contactor. g. Out of refrigerant. h. Water supply shut off (water cooled).

Condition	Possible Cause or Remedy
13. High head pressure.	a. Dirty condenser. b. System is overcharged. c. Air in refrigeration system. d. Defective fan motor.
14. Low suction pressure.	a. Restricted flow through filter-drier. b. System is low on refrigerant. c. Moisture in refrigeration system. d. Water distribution restricted. e. Defective T.X.V.
15. Ice slabs break when moving out of evaporator.	a. Bridging across front of ice slab too thin. Must be a minimum of ⅛" thick for proper harvest. b. Probe shaft is loose and has worked out into evaporator.
16. Water dripping into ice storage area from freezing plate.	a. Cam switch out of adjustment. b. Probe assembly out of adjustment. See page C-4. c. Machine low on charge making ice only on lower half of plate. d. Water tube turned back allowing water flow down back side of evaporator.

GENERAL SERVICE INFORMATION
STEP BY STEP WIRING DIAGRAMS EXPLANATION

The following conditions are assumed:

1. Ice/Off/Wash is in Ice position.
2. Bin Control is in closed position.
3. Suction line high temperature safety control is in closed position.

Freeze Cycle Step 1. Page D-2

The compressor is energized through the contactor. The water pump is energized through the normally closed contacts of the cam switch. The fan motor is energized through the normally closed contacts of relay #1 (on C-40 models a fan control is also used). Relay #2 is energized locking out the bin control to prevent a short cycle.

Freeze Cycle Step 2. Page D-2

The compressor, water pump, fan motor and relay #2 are energized as described in the previous step. At this time the Timer Initiate Control has closed (C-20, C-40 13 p.s.i.g. C-50, C-61 30 p.s.i.g.) energizing the Time Delay Module.

Defrost Cycle. Page D-2

When the Time Delay Module switch closes, power is supplied to relay #1. Relay #1, through its normally open contacts, energizes the hot gas solenoid, harvest assist motor and water purge valve. The fan motor is de-energized through the normally closed contacts of relay #1.

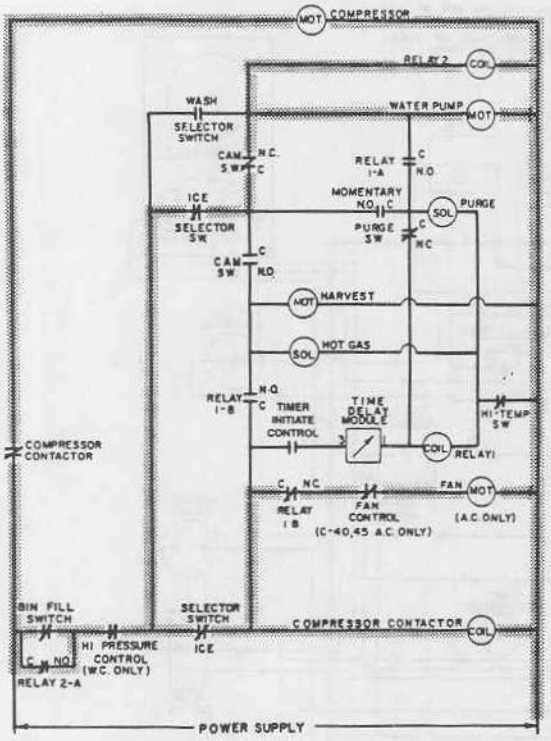
Harvest Cycle Step 4. Page D-2

The harvest assist motor has overcome the capillary attraction of the ice to the evaporator plate. The motor has moved and changed the position of the cam switch from normally closed to normally open. This has de-energized #1 and #2 relays, the water pump and water purge valve. The hot gas solenoid and harvest assist motor remain energized through the normally open contacts of the cam switch. The timer initiate thermostat has opened due to the rise in suction line temperature, de-energizing the time delay module. After the harvest assist motor has returned to its original position and the cam switch contacts have switched back to normally closed, the machine will begin another freeze cycle.

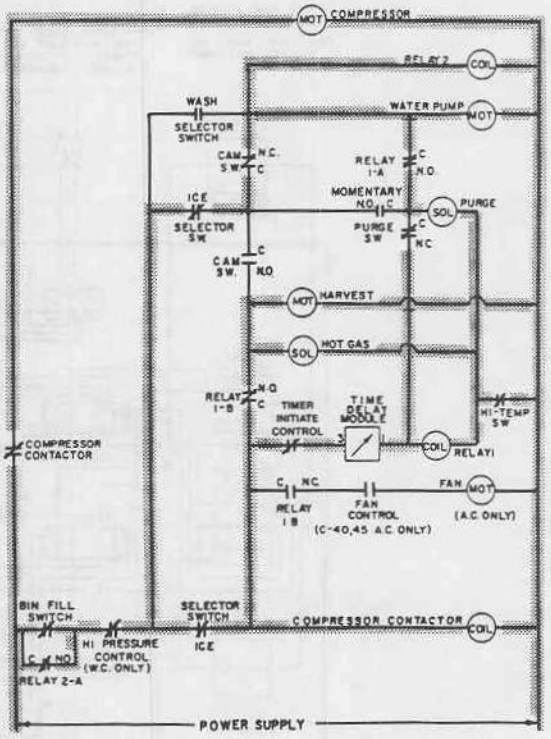
NOTE: When the cam switch makes its normally open contacts, relay #2 is de-energized. If the ice level in the bin is high enough to hold the splash curtain forward, the bin switch will be open. Under this set of circumstances the machine will shut off on the bin control. The machine will start again when ice is removed from the storage bin.

GENERAL SERVICE INFORMATION
STEP BY STEP WIRING DIAGRAMS

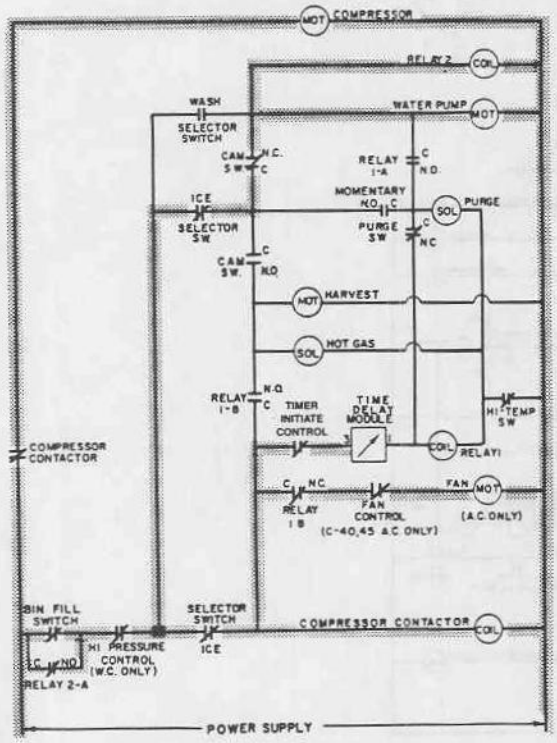
Freeze Cycle Step 1



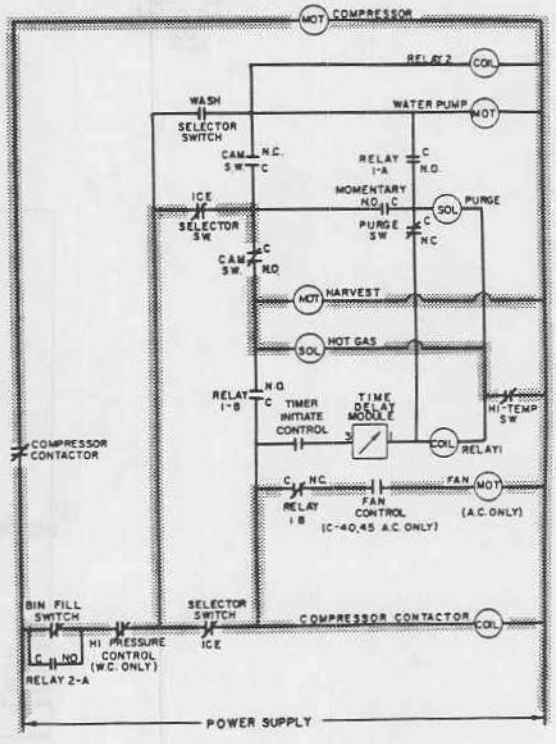
Defrost Cycle



Freeze Cycle Step 2



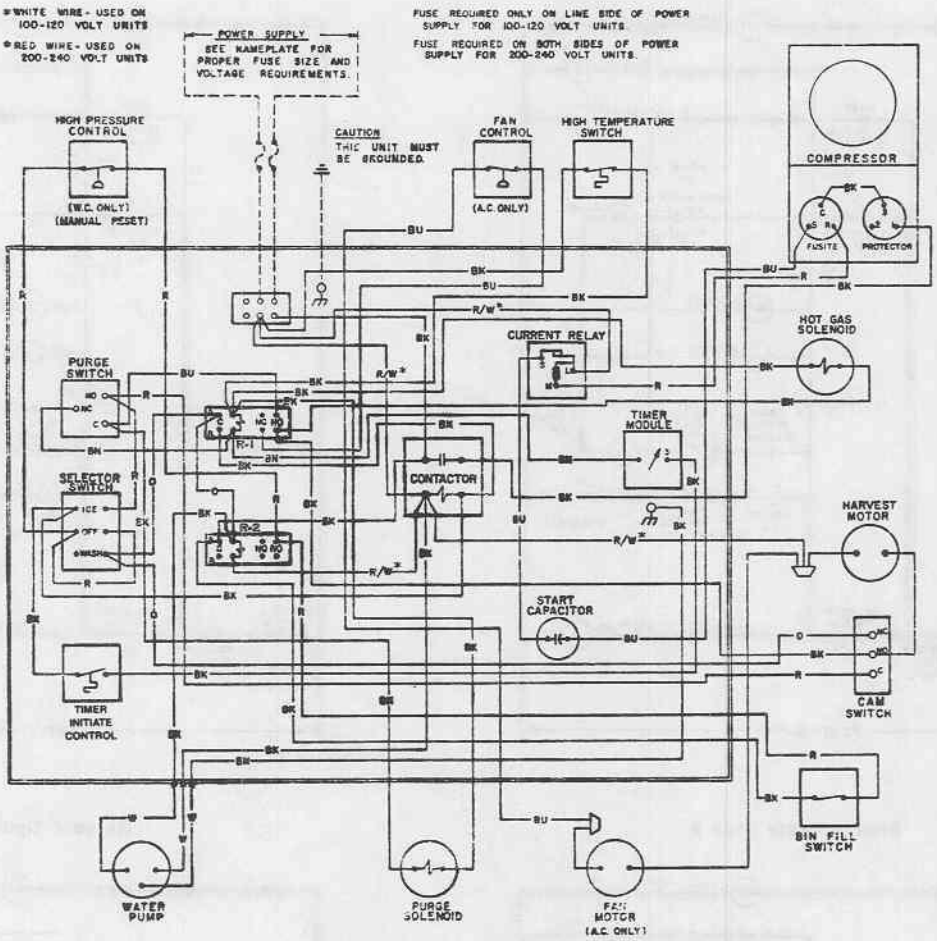
Harvest Cycle

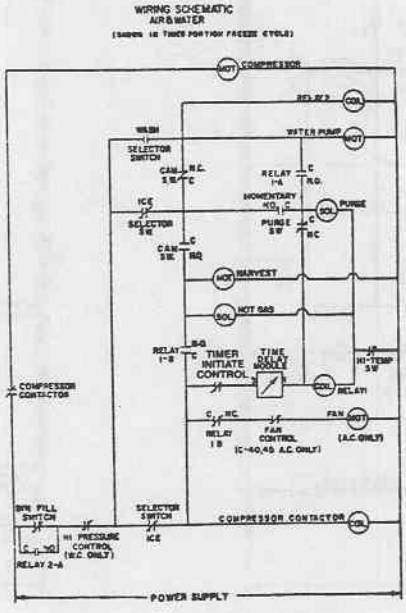


GENERAL SERVICE INFORMATION

WIRING SCHEMATIC

C-20/C-40 CUBERS 115/60/1

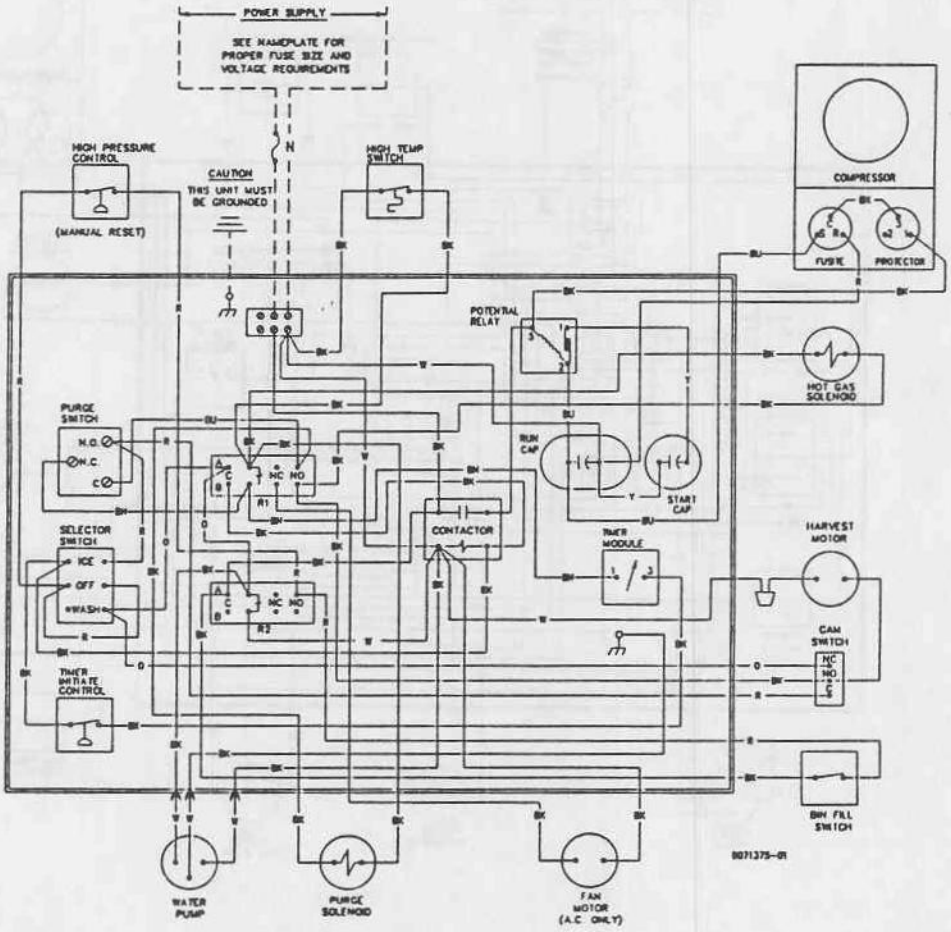




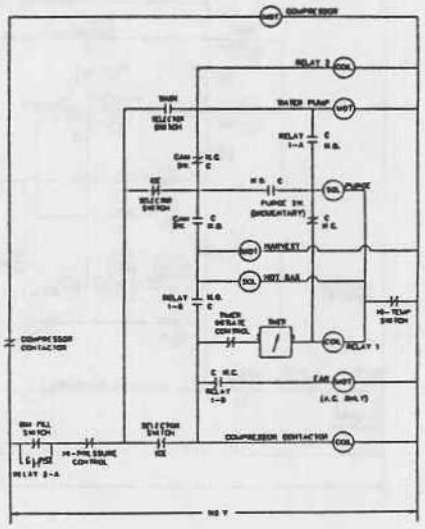
GENERAL SERVICE INFORMATION

WIRING SCHEMATIC

C-50 Cubers 115/60/1



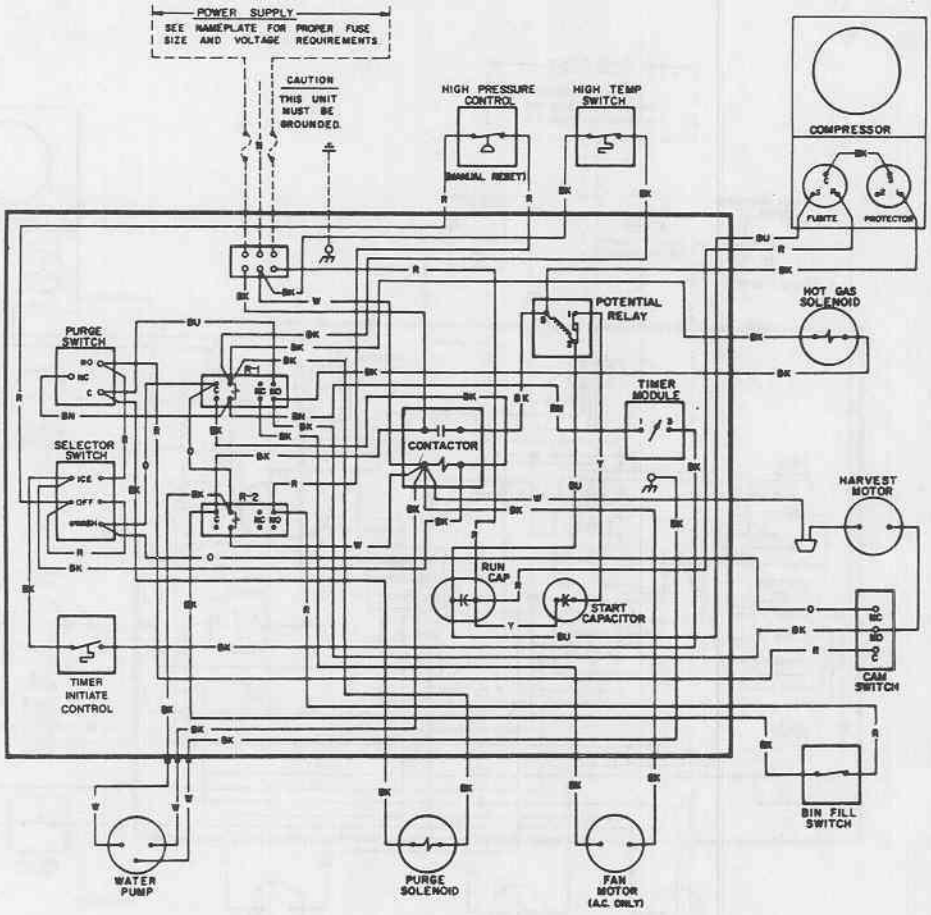
WIRING SCHEMATIC
AIR & WATER
(SHOWN IN TIMED PORTION FREEZE CYCLE)

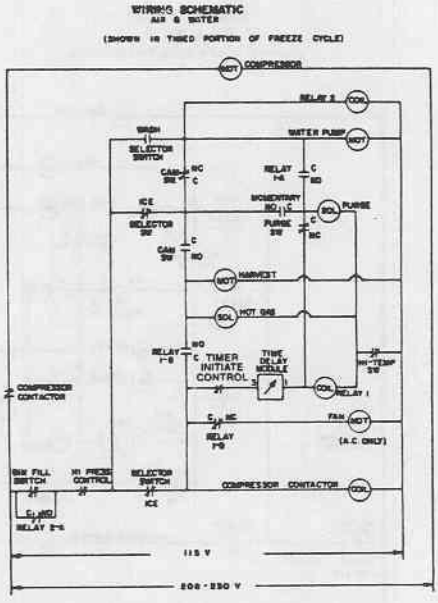


GENERAL SERVICE INFORMATION

WIRING SCHEMATIC

C-61 Cubers 230/115/60/1





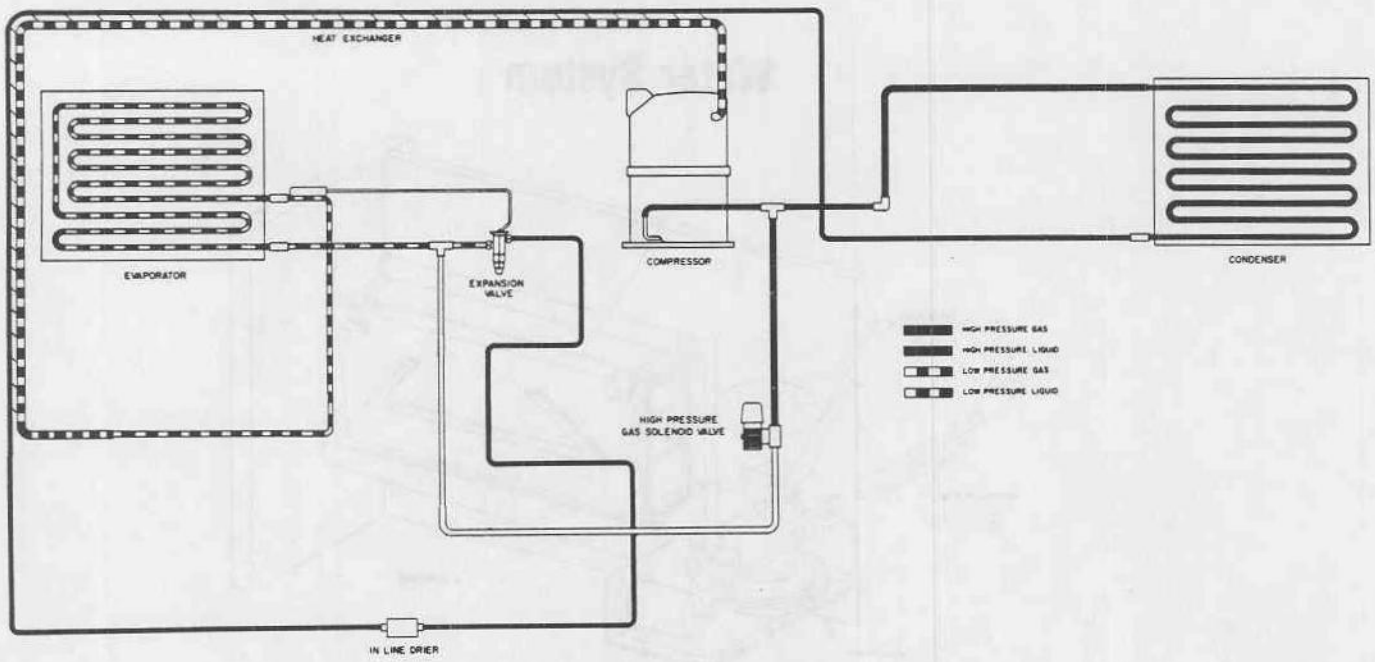
GENERAL SERVICE INFORMATION
REFRIGERATION SYSTEM

OPERATION

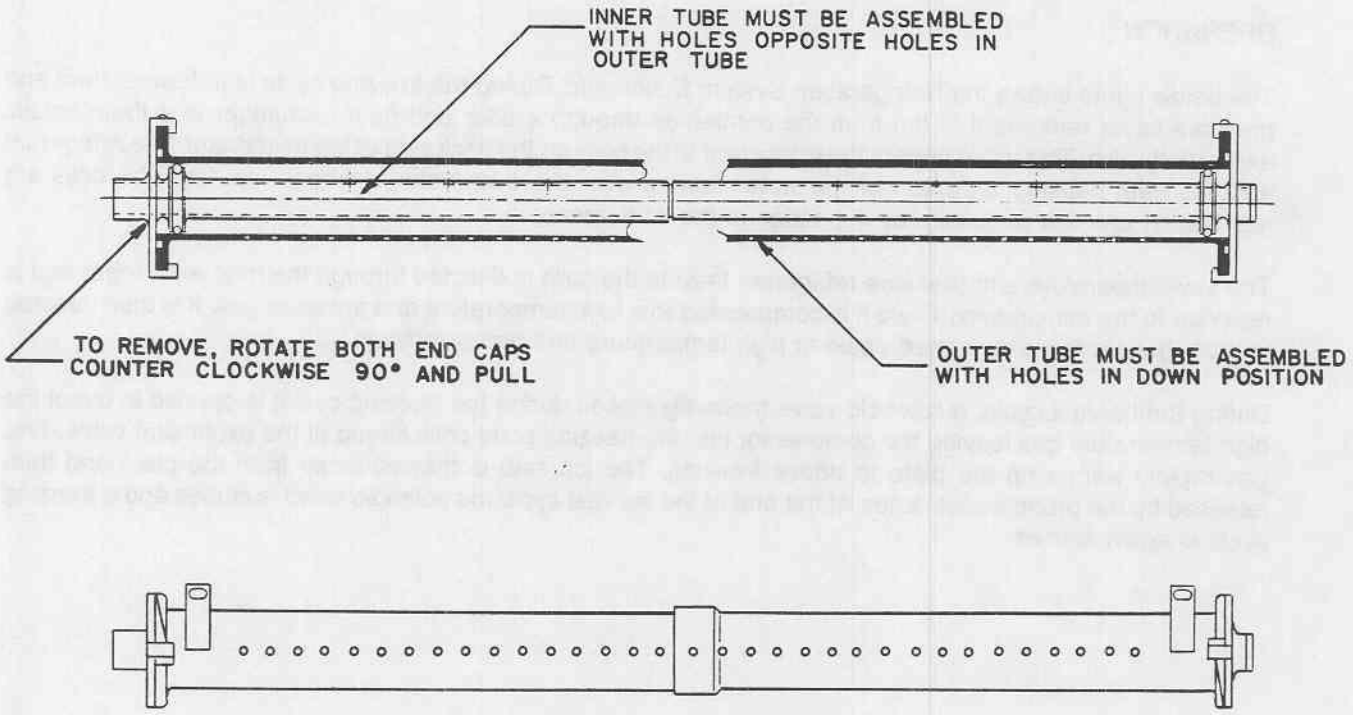
The below figure shows the Refrigeration System Schematic. During the freezing cycle high temperature and pressure liquid refrigerant is fed from the condenser through a drier and heat exchanger to a thermostatic expansion valve. This valve meters the refrigerant to the coils on the back side of the evaporator. The refrigerant absorbs heat causing a portion of the water flowing over the evaporator to freeze into ice. The coils are maintained at a low presssure by the action of the compressor.

The low temperature and pressure refrigerant leaving the coils is directed through the heat exchanger and is returned to the compressor. There it is compressed to a high temperature and pressure gas. It is then directed to a condenser to be converted again to high temperature and pressure liquid.

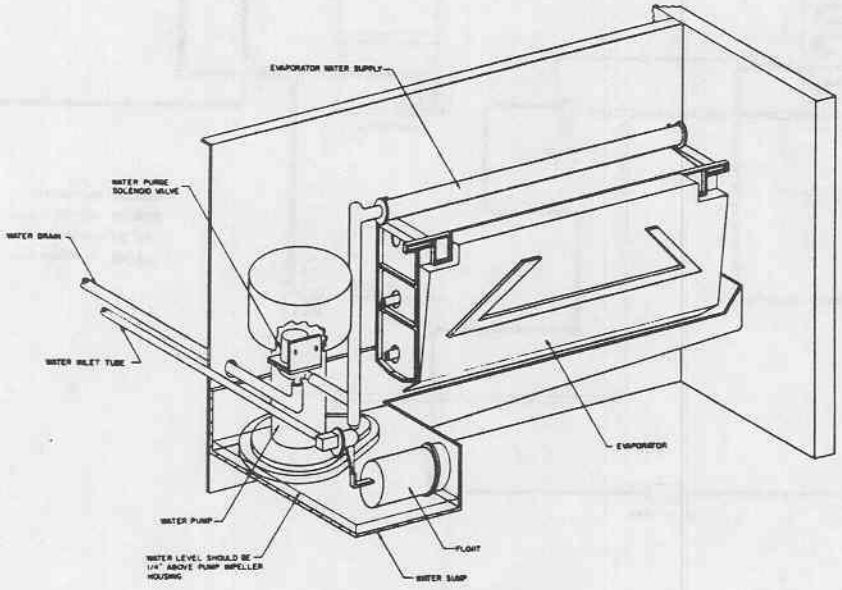
During the harvest cycle, a solenoid valve (normally closed during the freezing cycle) is opened to direct the high temperature gas leaving the compressor into the freezing plate coils ahead of the expansion valve. This gas rapidly warms up the plate to above freezing. The ice slab is thawed loose from the plate and then released by the probe assist motor. At the end of the harvest cycle the solenoid valve is closed and a freezing cycle is again started.



GENERAL SERVICE INFORMATION
WATER DISTRIBUTION TUBE ASSEMBLY


INNER TUBE MUST BE ASSEMBLED WITH HOLES OPPOSITE HOLES IN OUTER TUBE
TO REMOVE, ROTATE BOTH END CAPS COUNTER CLOCKWISE 90° AND PULL
OUTER TUBE MUST BE ASSEMBLED WITH HOLES IN DOWN POSITION

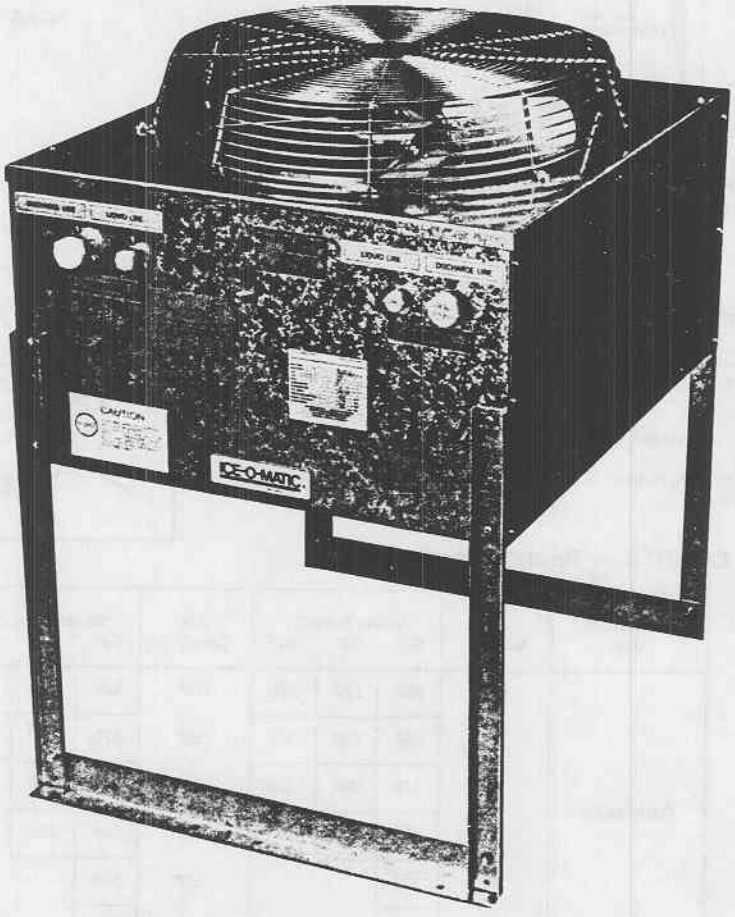
Water System



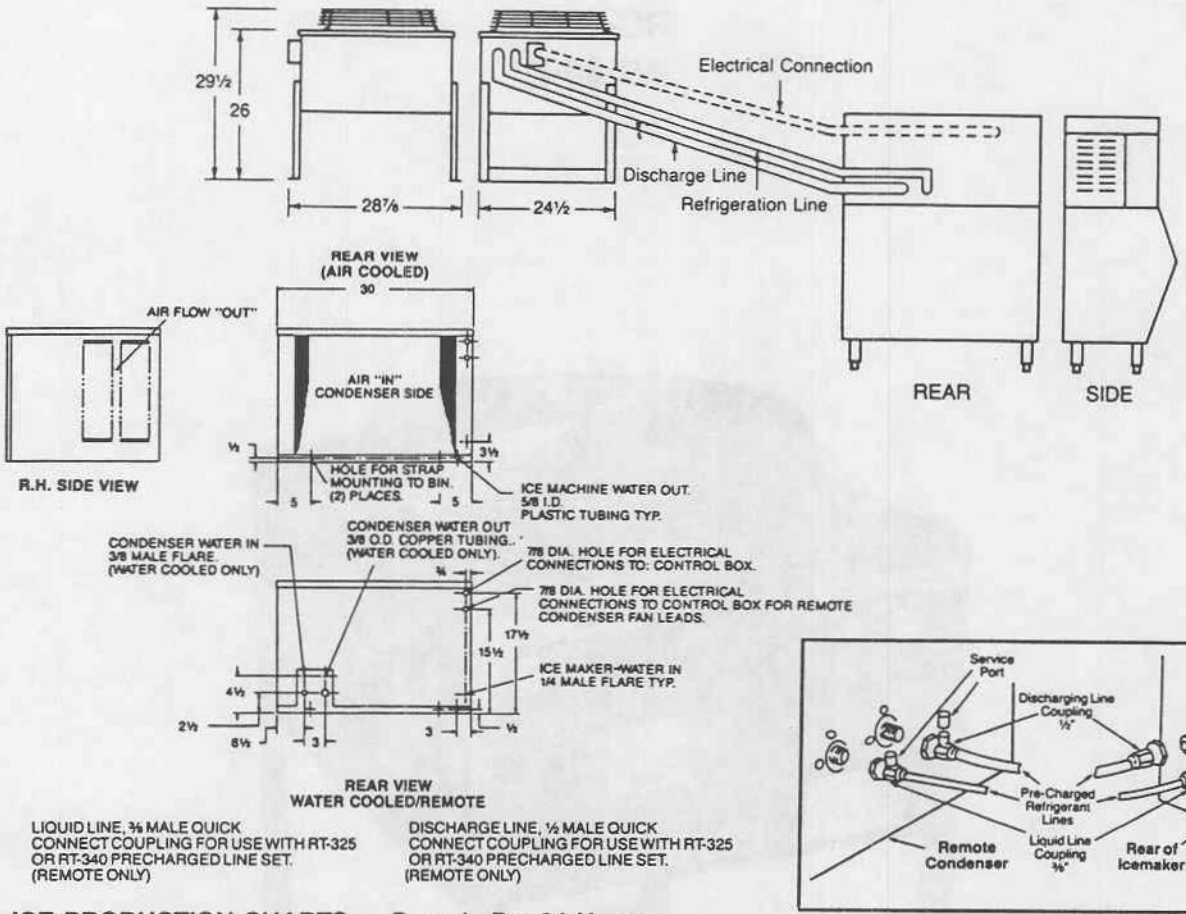
Water is circulated, by a water pump, from the water reservoir tank over the evaporator freeze plate(s) to be frozen. Any water that is not frozen returns to the reservoir to be re-circulated. At the end of the freeze cycle, when the machine is in hot gas defrost, a water purge valve opens and the water pump continues to run. This exhausts all water from the reservoir out through the purge valve drain. Completely dumping the water in this manner keeps the cubes clear, and lengthens the time between cleanings. The purge valve closes, and the water pump stops when the probe assist motor moves the cam switch to its n.o. contacts. This allows the water reservoir to re-fill in preparation for the next freeze cycle.

REMOTE CONDENSER MODELS

RC-40-2
RC-60-2



ELECTRICAL AND MECHANICAL SPECIFICATIONS



ICE PRODUCTION CHARTS — Pounds Per 24 Hours

Condensing Unit	Air Temp. °F	Water Temp °F 50°	70°	90°	Air Temp. °F	Water Temp. °F 50°	70°	90°
Remote Air	110°	330	287	270	110°	526	473	433
	90°	366	328	311	90°	570	510	473
	70°	378	344	329	70°	593	550	
	50°	378	344		50°	594	555	
	30°	378			30°	596		
	0°	378			0°	598		
Model Number		C-40-R				C-61-R		

Based on 90° Ambient at Icemaker

SPECIFICATIONS:

Model Number	Ice Prod. Lbs./24 hrs. @ 70°Air 50° Water	Condensing Unit	Comp. H.P.	Voltage Characteristics	No. of Wires	Operating Amps @ Rated Voltage	Max. Fuse Size	Refrigerant Type	Refrigerant Charge
C-40F-R-P-B	378	Remote	½	115/60/1	3	13.8	20	R-12	144 oz.
C-40H-R-P-B	378	Remote	½	115/60/1	3	13.8	20	R-12	144 oz.
C-61F-R-P-B	598	Remote	¾	208-230/115/60/1	4	12.7	20	R-502	144 oz.
C-61H-R-P-B	598	Remote	¾	208-230/115/60/1	4	12.7	20	R-502	144 oz.
C-40F-R-P-B C-40H-R-P-B	Use Remote Condenser RC-40-2								
C-61H-R-P-B C-61H-R-P-B	Use Remote Condenser RC-60-2								

ICE-O-MATIC REMOTE CONDENSER SYSTEMS

INTRODUCTION

Ice-O-Matic Remote Condenser Systems are made up of three packages: the remote condenser, the ice making unit, and the pre-charged line set. Pre-charged line sets are available in either 25 or 40 foot lengths.

Normal installation of the ice making unit should be followed. Please see installation instructions included in this manual on page 8.

In any installation, the pre-charged line sets, consisting of a liquid line (⅜" dia.) and a discharge line ½" dia.) are used as a one time, initial charge type of installation. Once the sealed couplings are connected and the internal seal is broken, the lines cannot be disconnected without losing the refrigerant charge. They are, however, reusable and when they are removed and re-connected the complete refrigeration system must be evacuated and re-charged with the proper amount of refrigerant. See page E-2 for proper refrigerant charges.

GENERAL DESCRIPTION

The remote condenser should be used in areas where sufficient airflow is not available in the area the ice maker is being installed or the heat being rejected by the condenser coil is undesirable.

The condenser coil should not be exposed to temperatures below −20°F or above 120°F.

The remote condenser functions as a normal refrigeration system until the temperature at the condenser coil drops below 70°F. At this time the mixing valve will begin to bypass enough hot gas from the discharge line directly into the receiver to keep the liquid line feeding the expansion valve at a steady 125 p.s.i. on R-12 (225 p.s.i. on R-502) units. This bypassing is done in spurts through the mixing valve. The amount of gas being bypassed will depend on the temperature at the condenser coil (e.g. the colder the temperature at the condenser coil, the more gas will bypass, the warmer the line between the valve and the receiver will become). For the complete explanation of this valve, please refer to the schematic on page E-5 of this manual.

The condenser fan will run throughout the cycle. The bypassing action of the mixing valve eliminates the need for the fan control.

There is an on-off switch provided at the condenser coil. This switch turns off only the condenser fan and should always be in the "on" position when the icemaker is running. For proper wiring of the condenser to the ice maker, please refer to the wiring diagrams included in this manual on page E-9 and E-10. If two units are being run on −2 remote condenser, the fan motor must be wired to run 100% of the time.

GENERAL SERVICE INFORMATION
COMPONENT DESCRIPTION

1) **Mixing Valve** — This valve serves as the head pressure regulating valve. It contains a pre-determined charge of nitrogen in the bellows. Refer to page E-4 for diagram and explanation.

2) **Receiver** — The amount of liquid in the receiver will vary with the temperature at the condenser coil.

3) **Liquid solenoid valve and pump-down low pressure control** — When the bin control opens or the on-off switch is turned to the OFF position, the liquid line solenoid valve closes and the system begins to pump down. When the low pressure reaches 5 p.s.i. on R-12 and 502 units, the dual pump-down low pressure control opens the contactor and shuts the machine off. After the bin control closes or the on-off switch is turned back on, the liquid line solenoid valve opens and the high and low side pressures start to equalize. When the low side pressure reaches 55 p.s.i. on R-12 and 502 units the pump-down low pressure control closes and the machine starts into a freeze cycle. When the machine is off for extended periods of time (e.g. overnight) it will pump itself down approximately once every hour. This is due to the equalizing of the pressures during the off cycle resetting the pump-down low pressure control. It is a normal function of the system. The high pressure control opens at 250 p.s.i. on R-12 units (400 p.s.i. on R-502 units) in the event of extremely high discharge pressure.

4) **Condenser fan motor** — Is a single speed permanent split capacitor motor and should be wired according to the wiring diagram on pages E-7 and E-8 in this manual. The motor should be oiled every six months with 5 ccs of 20 weight SAE non-detergent oil. Apply oil through the neoprene oil hole in the center of the motor. The on-off switch mounted on the outside of the condenser cabinet should be left in an on position for proper operation. Turning this switch off cuts power only to the fan motor.

   Note: If two machines are being run on an RC-40-2 or R-60-2, the fan motor should be wired to a separate power source to run 100% of the time.

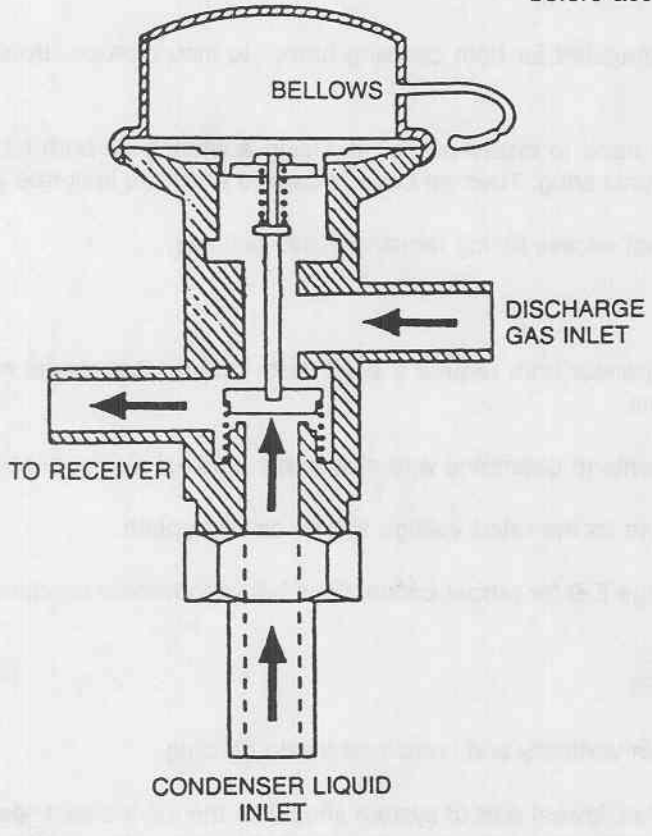
GENERAL SERVICE INFORMATION
MIXING VALVE OPERATION

The mixing valve is used to maintain a constant head pressure. There is a nitrogen charge contained in the bellows of the valve. This charge works against liquid line pressure going to the receiver.

When the temperature at the condenser is above 70° the refrigerant flow through the valve is from the condenser to the receiver.

When the temperature at the condenser is below 70° the pressure in the bellows of the mixing valve overcomes the pressure in the liquid line going to the receiver, the valve opens and allows discharge high pressure gas, as well as liquid from the condenser, to flow through the valve and mix in the receiver to maintain head pressure and liquid line temperature and pressure.

NOTE: If it becomes necessary to evacuate and recharge the machine, the entire charge (see refrigerant charge on page E-2 of this manual) must be added before accurate pressure readings can be taken.



GENERAL INSTALLATION INSTRUCTIONS

REMOTE CONDENSER

1. Choose a location that is protected from the extremes of dirt, dust, rain, sun and prevailing winds.
2. Vertical discharge mounting of the condenser is recommended.
3. Unit must be leveled.
4. Installation must meet local building, plumbing and electrical codes.

PRE-CHARGED LINE SET

1. Install the 3/8" liquid line and 1/2" discharge line to the proper ports, as labeled, being sure the service port is towards the remote condenser end. See attached diagram on page E-7.
2. See attached diagram on pages E-7 & E-8 for proper installation techniques and tube routings of the line sets.
3. Lubrication (refrigerant oil) is recommended for both coupling halves to insure proper trouble-free assembly of line sets.
4. Thread coupling valves together by hand to insure proper fit. Using a wrench on both halves, to prevent tubes from twisting, tighten until snug. Then an extra 1/4 turn to ensure a leak-free joint.
5. Plan ahead when routing lines so that excess tubing remains inside building.

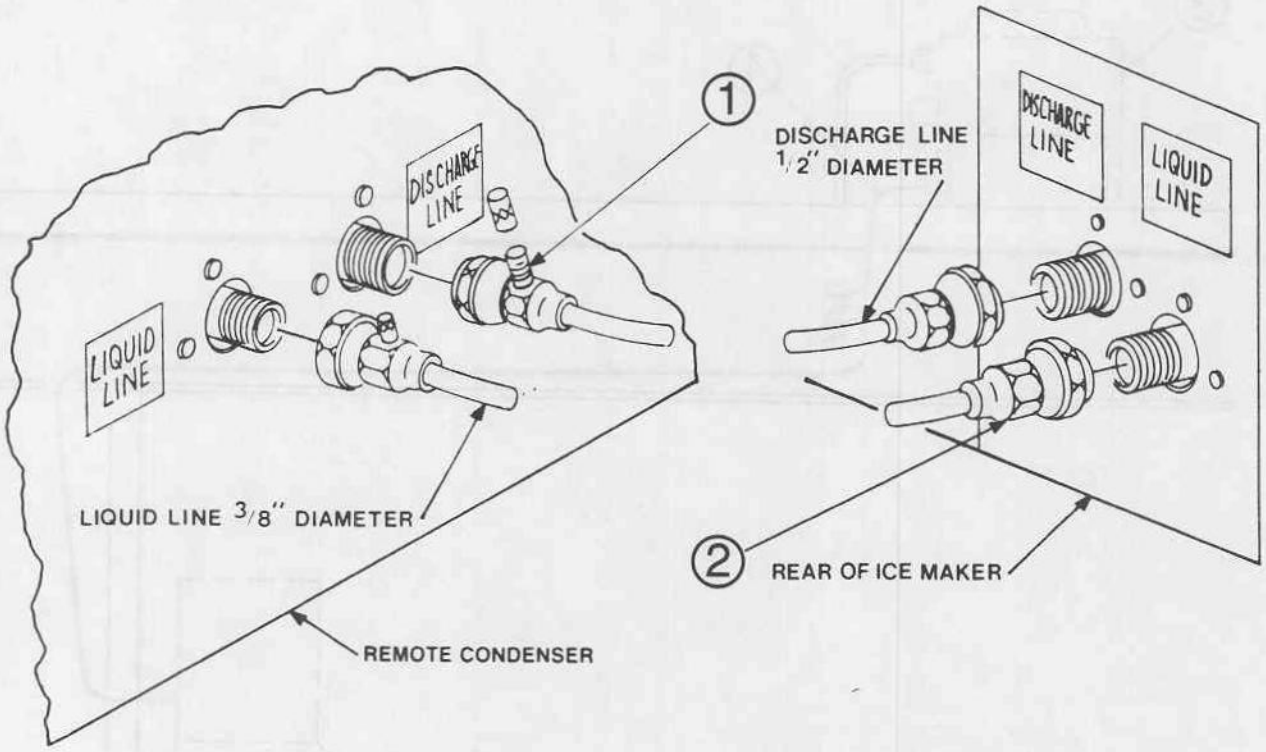
ELECTRICAL CONNECTIONS

1. The ice maker and the remote condenser both require a solid earth ground that meets national, state and local electrical requirements.
2. See nameplate for current requirements to determine wire size to be used for electrical hook up.
3. Make sure supply voltage is the same as the rated voltage shown on nameplate.
4. See wiring diagram beginning on page E-9 for proper connections between remote condenser and ice machine.

RULES FOR RUNNING REMOTE LINES

1. Loops in excess tubing should be run vertically and contained inside building.
2. Condenser should be above ice-maker, lowest part of system should be the ice-maker, lines should not run below the line connections on the ice maker (e.g., lines routed below — then up to connections on ice maker result in oil traps.) See pages E-7 & E-8.

GENERAL SERVICE INFORMATION
REMOTE TUBING ROUTING



CONNECTING PRE-CHARGED LINES

Both the discharge and liquid lines come equipped with schrader fittings on one end of the tubing. This schraeder should be connected to the remote condenser on both the discharge and liquid lines for access to pressure readings at the condenser as shown in #1. When connecting the quick connect fittings, #2, always lubricate fittings with refrigerant oil. Fittings should be tightened until snug—and then given another quarter turn. ALWAYS LEAK CHECK AROUND FITTINGS AFTER INSTALLATION HAS BEEN MADE.

PROPER TUBING ROUTING

When installing discharge and liquid lines from remote condenser to the ice making head please use the following guidelines:

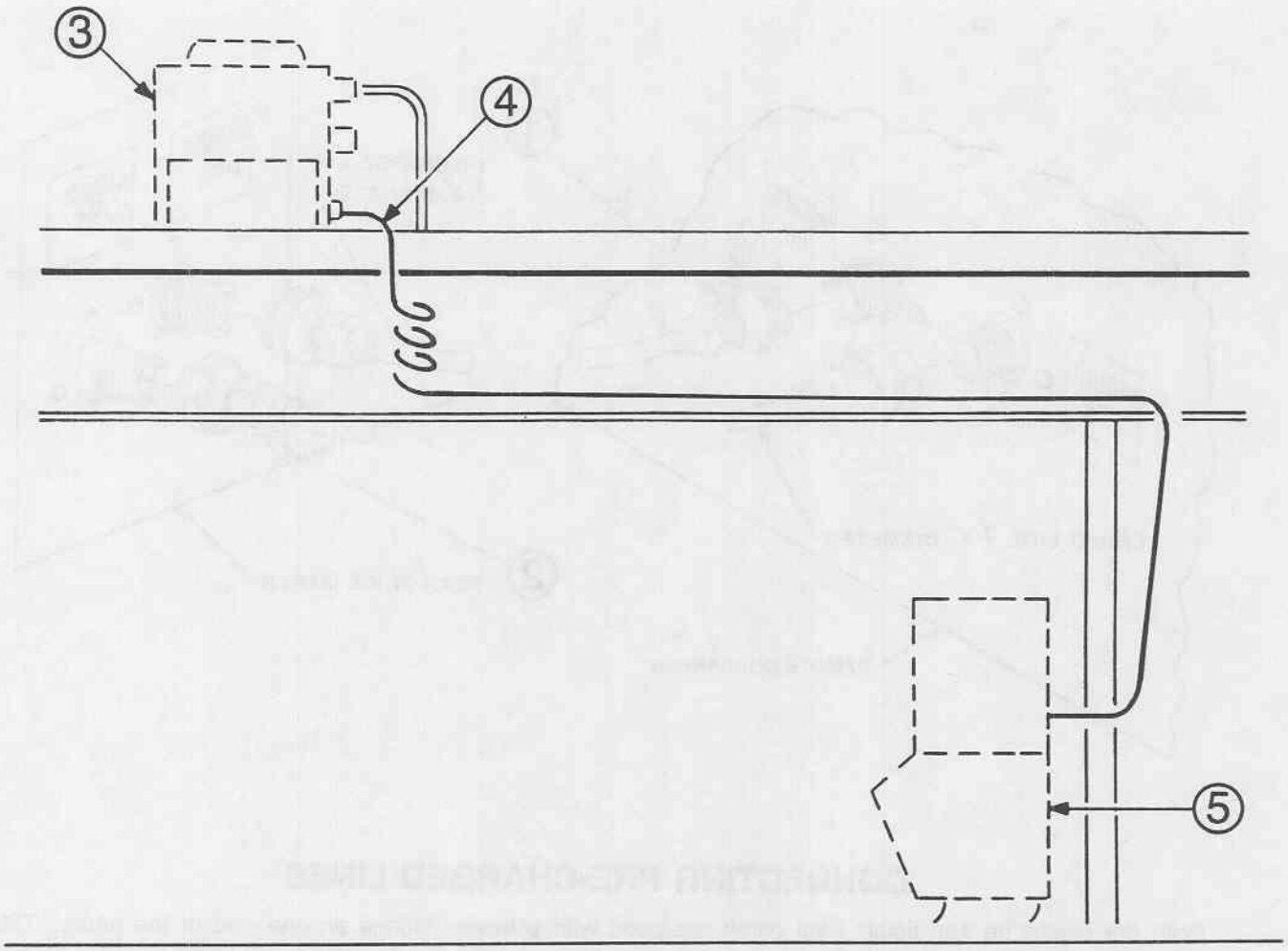
1. Remote condenser #3 should always be installed above the icemaker #5 as shown.
2. All excess tubing #4 should be routed inside the building and coiled in a vertical spiral as shown in #6 to prevent oil trapping in the lines. Any tubing run outside should be insulated to protect it from surrounding ambient conditions. Tubing should follow straight line routing whenever possible. The lowest spot in the remote tubing run should be the connection at the back of the ice maker head.

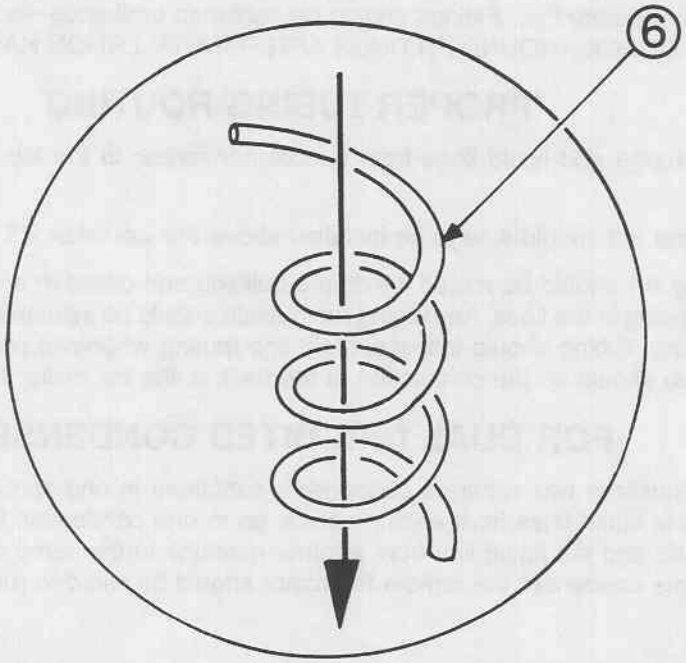
FOR DUAL CIRCUITED CONDENSER

The dual pass condenser is two separate condensers contained in one shroud. When routing lines insure that the discharge and liquid lines from each machine go to one condenser. Do not connect the discharge line from one machine and the liquid line from another machine to the same condenser. When running two machines on the same condenser the remote fan motor should be wired to run 100% of the time.

GENERAL SERVICE INFORMATION

REMOTE TUBING ROUTING (CONTINUED)

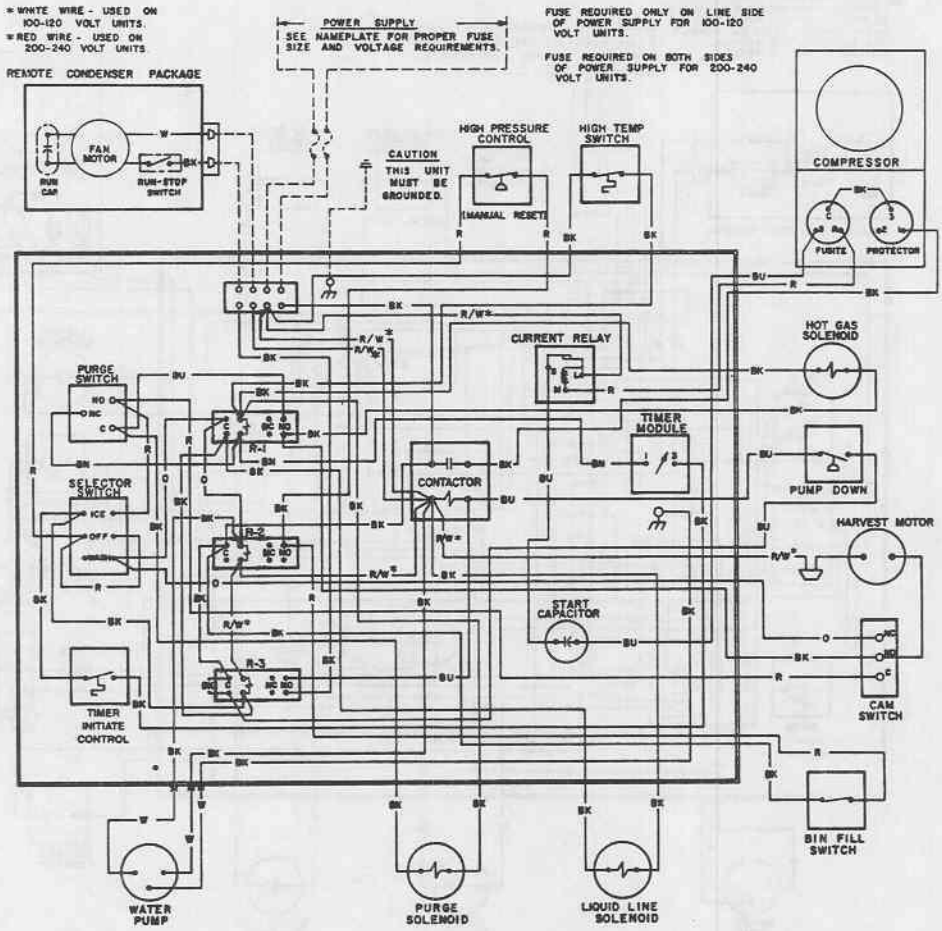


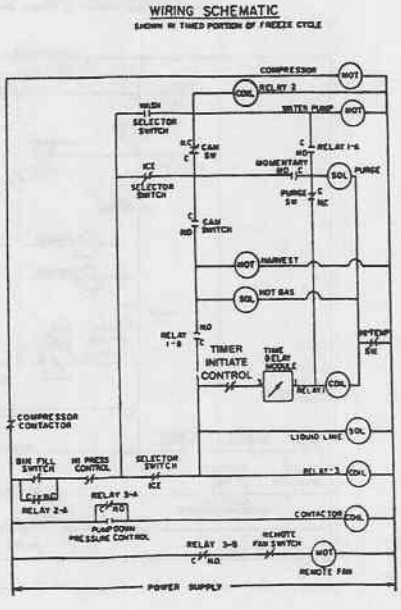


GENERAL SERVICE INFORMATION

WIRING SCHEMATIC

C-40-B Remote

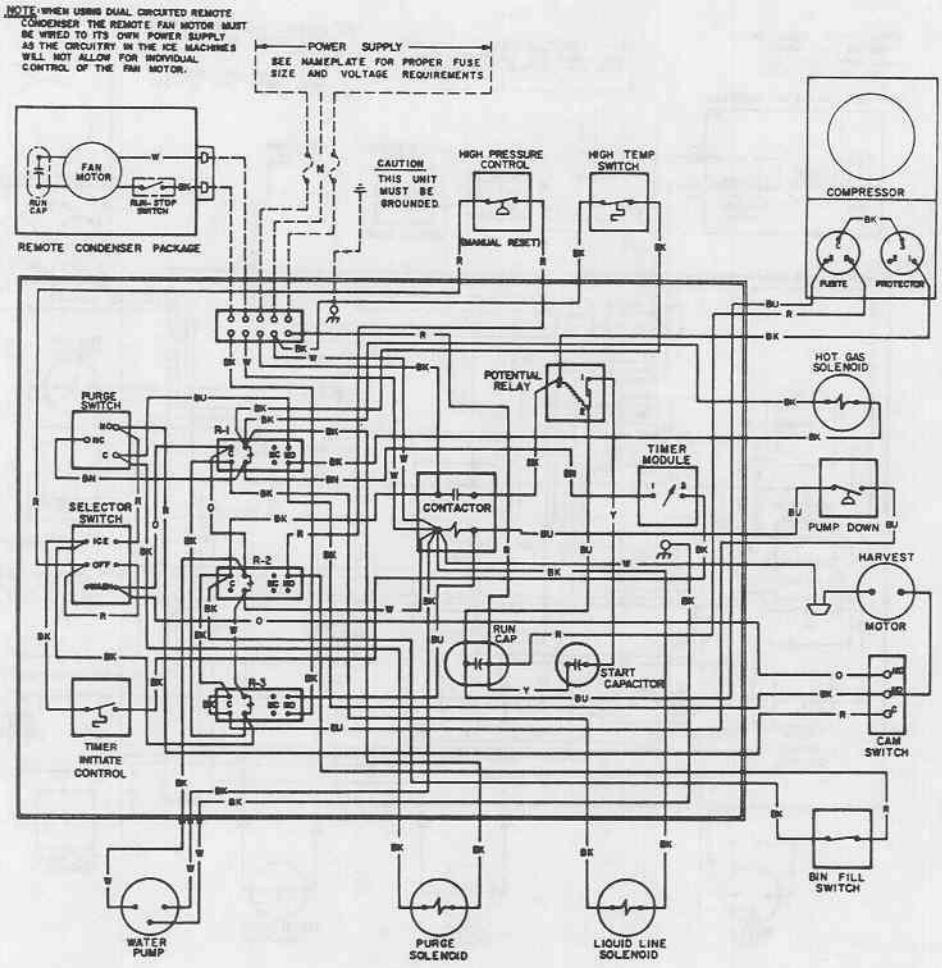




GENERAL SERVICE INFORMATION

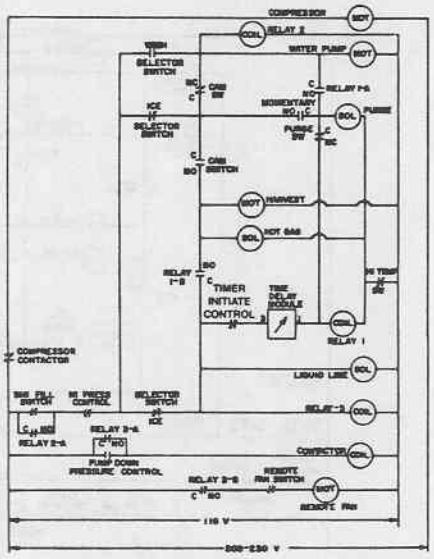
WIRING SCHEMATIC

C-61-B Remote



WIRING SCHEMATIC

SHOWN IN TIMED PORTION OF FREEZE CYCLE



PARTS SECTION

When Ordering Parts
Please Specify
Model and Serial Number

MILE HIGH EQUIPMENT COMPANY DENVER, COLORADO 80239 USA

MODEL _____ SERIAL NUMBER _____

VOLTS _____ HZ _____ Ph _____ WIRE _____

COMPRESSOR..... F.L.A. _____ L.R.A. _____

AUGER DRIVE MOTOR..... _____ Amps

BIN DISPENSE MOTOR..... _____ Amps

HARVEST MOTOR(S) EA. ( ) ..... _____ Amps

FAN MOTOR(S) EA. ( ) ..... _____ Amps

PUMP MOTOR(S) EA. ( ) ..... _____ Amps

MINIMUM CIRCUIT AMPACITY ..... _____ Amps

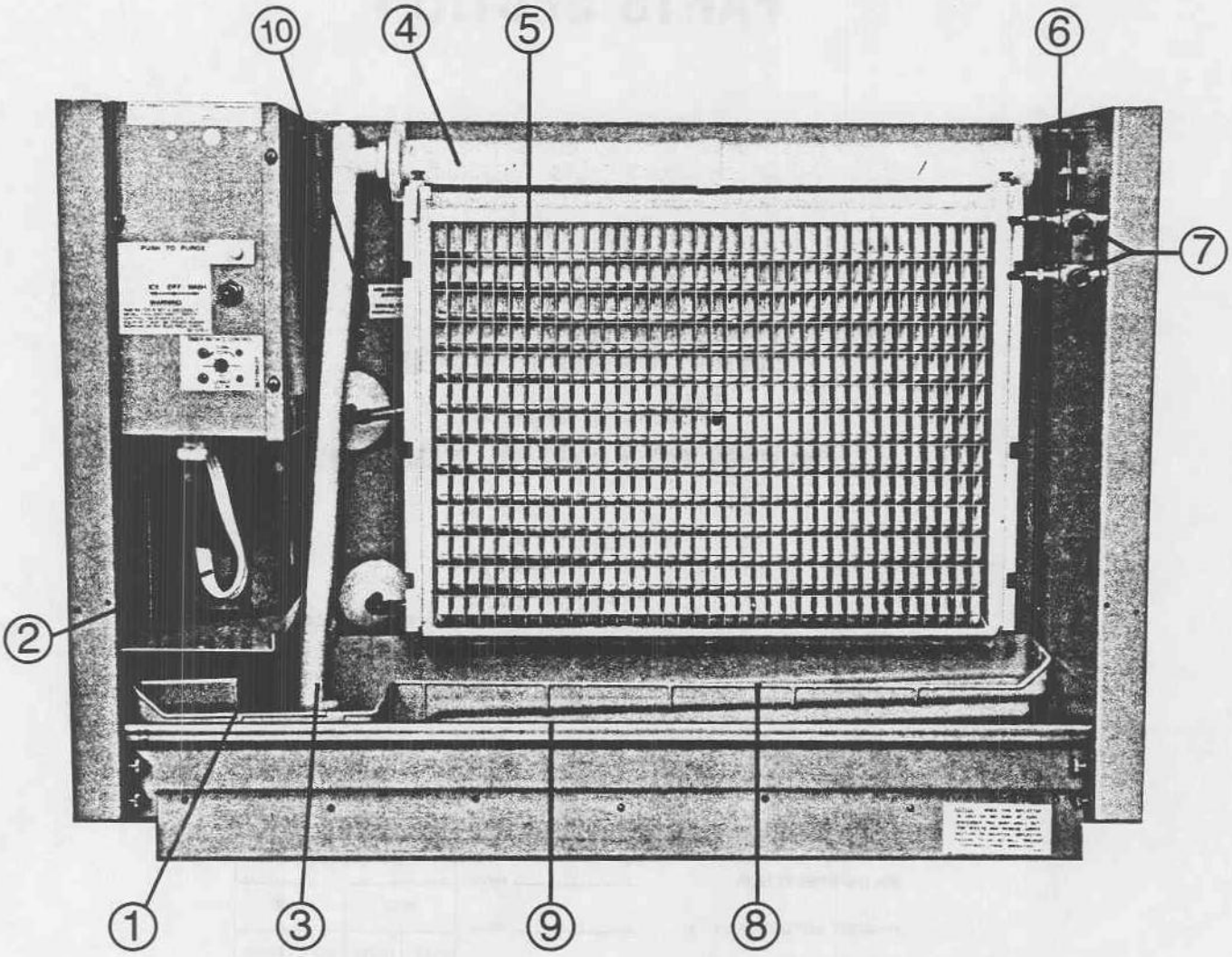
MAX. BRANCH CIRCUIT FUSE SIZE _____ Amps

REFRIGERANT TYPE..... _____

TOTAL SYSTEM
REFRIGERANT CHARGE ..... _____ Oz. _____ Grams

TEST PRESSURES			
R-12		R-502	
P.S.I.	BARS	P.S.I.	BARS
HI 245	HI 16.2	HI 325	HI 22.4
LO 145	LO 10.0	LO 175	LO 12.1

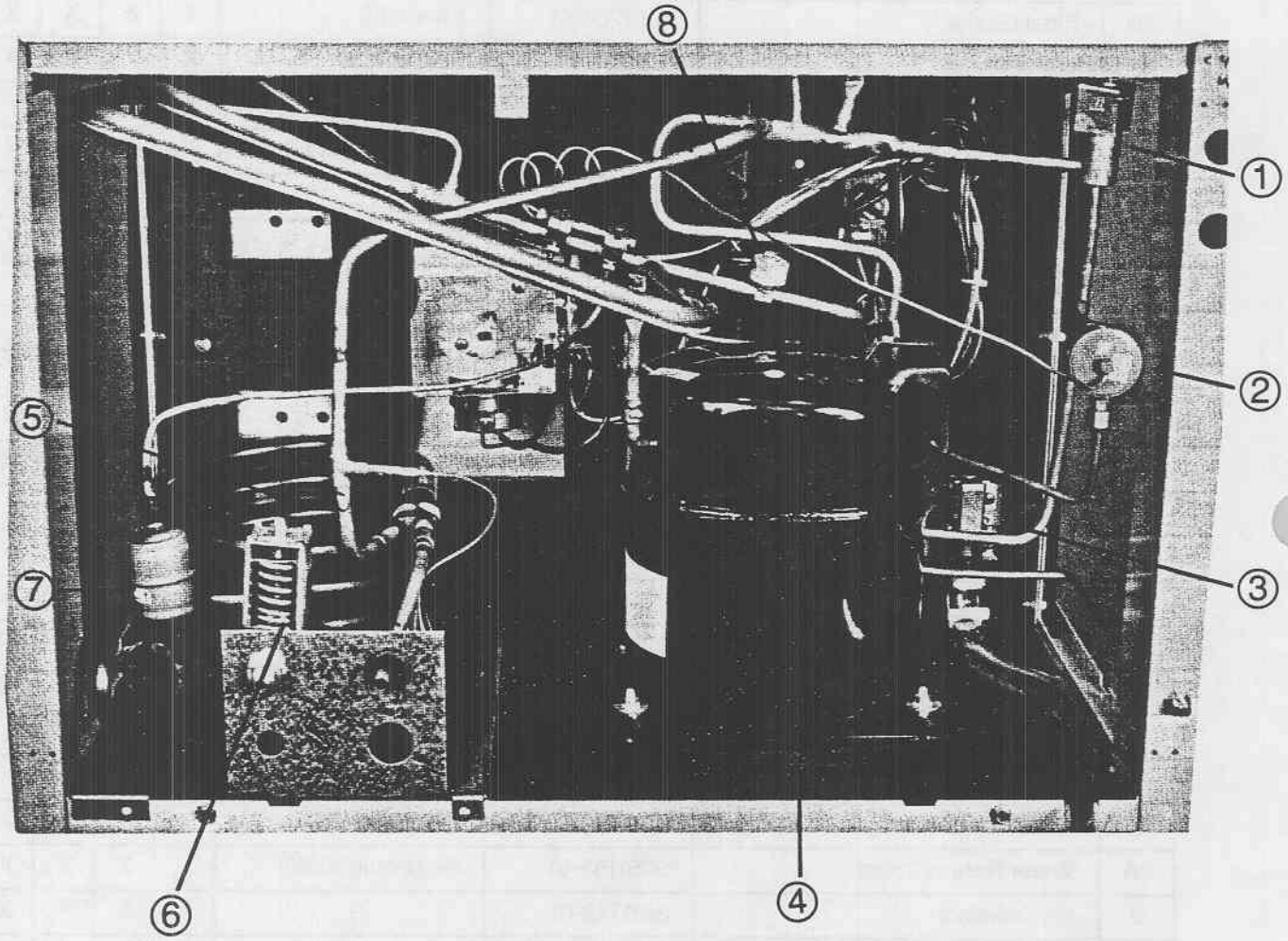
PARTS SECTION
EVAPORATOR SECTION



PARTS SECTION
EVAPORATOR & WATER SYSTEM

Index No.	Description	Part Number	Notes	C-20	C-40	C-50	C-61
1	Float Ball and Stem	9131180-01	1 and 1A Replace	X	X	X	X
1A	Elbow for Float	9131127-02	9131120-01 After 1/86	X	X	X	X
1	Float Ball and Stem	9131120-01	Prior to 1/86	X	X		X
1B	Float Gasket	9051204-01	After 1/86	X	X	X	X
2	Water Pump	9161076-01	Plug in Type	X	X	X	X
3	Water Pump Tube	9051142-02	Pump to Dist. Tube	X			
3	Water Pump Tube	9051142-01	Pump to Dist. Tube		X	X	X
3A	Clamp	9021010-04		X	X	X	X
4	Water Distributor Assy.	2041338-01		X	X	X	X
4A	Thumb Screws	9031051-01					
5	Evaporator	2051109-02	Half Cube	X			
5	Evaporator	2051109-01	Full Cube	X			
5	Evaporator	2051110-05	Half Cube		X	X	X
5	Evaporator	2051110-04	Full Cube		X	X	X
5A	Splash Curtain Assy.	2051092-02		X			
5A	Splash Curtain Assy.	2051092-01	Prior to 10/86		X		X
	Splash Curtain Assy.	9051154-02	Beginning 10/86		X	X	X
6	Bin Control Switch	9101122-01	Replaced by 6A	X	X		X
6A	Bin Control Switch Assy.	2061471-02		X	X	X	X
7	Schraeder Valves	9091062-01		X			
7A	Rego Valve	9091064-01			X	X	X
8	Water Return Trough	9051139-01	Prior to 10/86	X	X	X	X
8A	Water Return Trough	9051153-01	Beginning 10/86		X	X	X
9	Ice Deflector	3011742-01		X	X	X	X
10	High Pressure Cut-out	9041051-01	R-12	X	X		
10A	High Pressure Cut-out	9041052-02	R-502			X	X

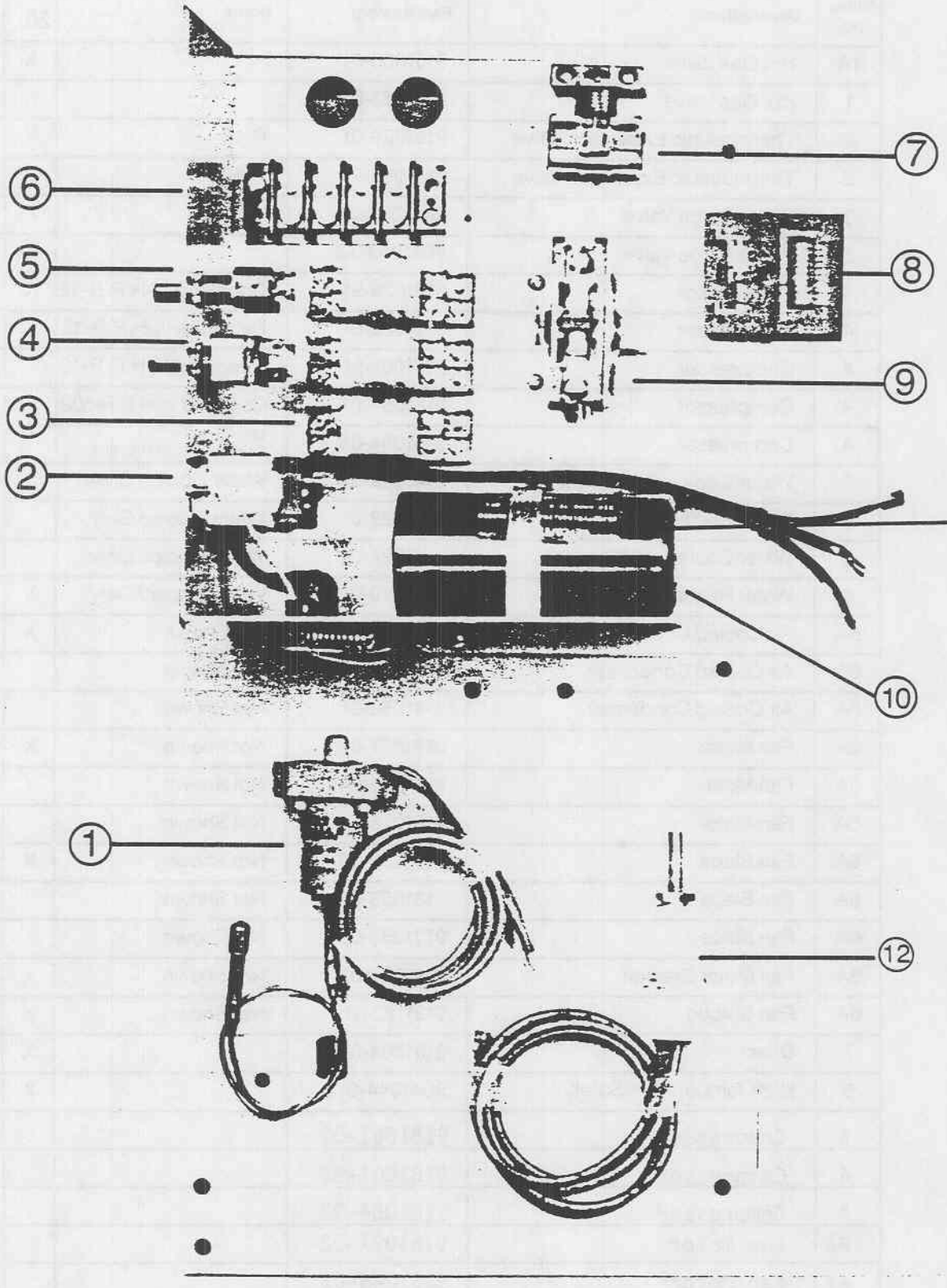
PARTS SECTION
CONDENSING SECTION



PARTS SECTION
CONDENSING UNIT

Index No.	Description	Part Number	Notes	C 20	C 40	C 50	C 61	C 25	C 45
1A	Hot Gas Valve	9151053-01		X	X	X	X		
1	Hot Gas Valve	9151053-02		X	X	X	X	X	X
2	Thermostatic Expansion Valve	9151020-01	R-12	X	X			X	X
2	Thermostatic Expansion Valve	9151006-01	R-502			X	X		
3	Water Purge Valve	9041053-01		X	X	X	X		
3	Water Purge Valve	9041053-02		X	X	X	X	X	X
4	Compressor	9181024-91	Copeland ⅓ H.P. R-12	X					
4	Compressor	9181062-01	Dan Foss ⅓ H.P. R-12	X					
4	Compressor	9181001-91	Copeland ½ H.P. R-12		X				
4	Compressor	9181054-91	Copeland ¾ H.P. R-502				X		
4	Compressor	9181054-03	115V Copeland ¾ H.P. R-502			X			
5	Water Cooled Condenser	9141022-01	Water Cooled Only	X				X	
5	Water Cooled Condenser	9141023-01	Water Cooled Only		X				X
5	Water Cooled Condenser	9141024-01	Water Cooled Only			X	X		
6	Water Regulating Valve	9041010-01	Water Cooled Only	X	X	X	X	X	X
6A	Air Cooled Condenser	9141048-01	Not Shown	X				X	
6A	Air Cooled Condenser	9141049-01	Not Shown		X				X
6A	Air Cooled Condenser	9141050-01	Not Shown			X	X		
6A	Fan Motor	9161077-01	Not Shown	X					
6A	Fan Motor	9161045-04	Not Shown		X				
6A	Fan Motor	9161078-01	Not Shown			X	X		
6A	Fan Blade	9131053-02	Not Shown	X				X	
6A	Fan Blade	9131053-01	Not Shown		X				X
6A	Fan Blade	9131053-03	Not Shown			X	X		
6A	Fan Motor Bracket	9131054-01	Not Shown	X	X	X	X	X	X
6A	Fan Shroud	9131122-01	Not Shown	X	X	X	X	X	X
7	Drier	9151004-02		X	X	X	X	X	X
8	High Temperature Safety	9041044-01		X	X	X	X	X	X
4	Compressor	9181061-02						X	
4	Compressor	9181001-92							X
4	Compressor	9181054-92							
6A	Fan Motor	9161077-02						X	
6A	Fan Motor	9161045-06							X
6A	Fan Motor	9161078-02							

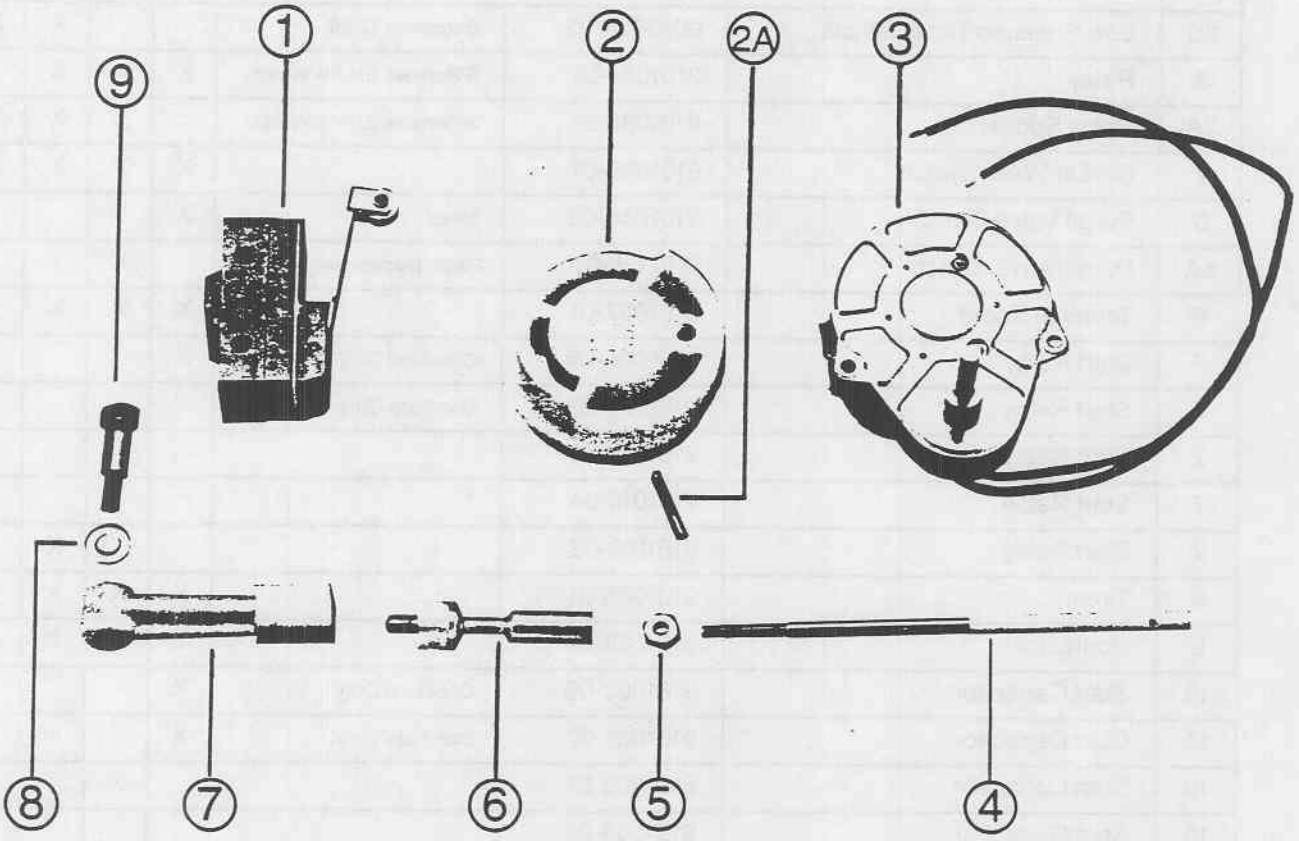
PARTS SECTION
CONTROL SECTION



PARTS SECTION
CONTROL BOX

Index No.	Description	Part Number	Notes	C 20	C 40	C 50	C 61	C 25	C 45
1	High Pressure Control	9041051-01	Water Cooled and Remotes	X	X			X	X
1	High Pressure Control	9041051-02	Water Cooled and Remotes			X	X		
2	Timer Initiate Thermostat	9041052-01		X	X		X		
2A	Low Pressure Timer Initiate	9041054-01	Beginning 12/86	X	X			X	X
2B	Low Pressure Timer Initiate	9041054-02	Beginning 12/86			X	X		
3	Relay	9101084-01	3/Remote. 2/Air & Water	X	X	X	X		
3A	Relay Socket	9101083-01	3/Remote. 2/Air & Water	X	X	X	X		X
4	On/Off/Wash Switch	9101086-01		X	X	X	X	X	X
5	Purge Valve Switch	9101056-02	Metal	X				X	
5A	Purge Valve Switch	9101125-01	Plastic Bodies used after 8/86		X	X	X		X
6	Terminal Board	9101037-01		X	X	X	X	X	X
7	Start Relay	9181004-05	Copeland Only	X					
7	Start Relay	9181004-08	Dan Foss Only	X					
7	Start Relay	9181004-01			X				
7	Start Relay	9181010-04					X		
7	Start Relay	9181010-02				X			
8	Timer	9101085-01		X	X	X	X	X	X
9	Contactor	9101002-03		X	X	X	X		
10	Start Capacitor	9181003-09	Copeland Only	X					
10	Start Capacitor	9181061-60	Dan Foss Only	X					
10	Start Capacitor	9181003-01			X				
10	Start Capacitor	9181003-08					X		
10	Start Capacitor	9181003-20				X			
11	Run Capacitor	9181009-11				X			
11A	Run Capacitor	9181009-08					X		
12	Fan Control	9041050-01	C-40 Air Cooled Only		X				X
12A	Pumpdown Control	9041040-03	Remotes Only		X		X		
3	Relay	9101084-02						X	X
7	Start Relay	9181004-09						X	
7	Start Relay	9181004-07							X
9	Contactor	9101002-04						X	X
10	Start Capacitor	9181061-61						X	
10	Start Capacitor	9181003-02							X
11	Run Capacitor	9181009-06							

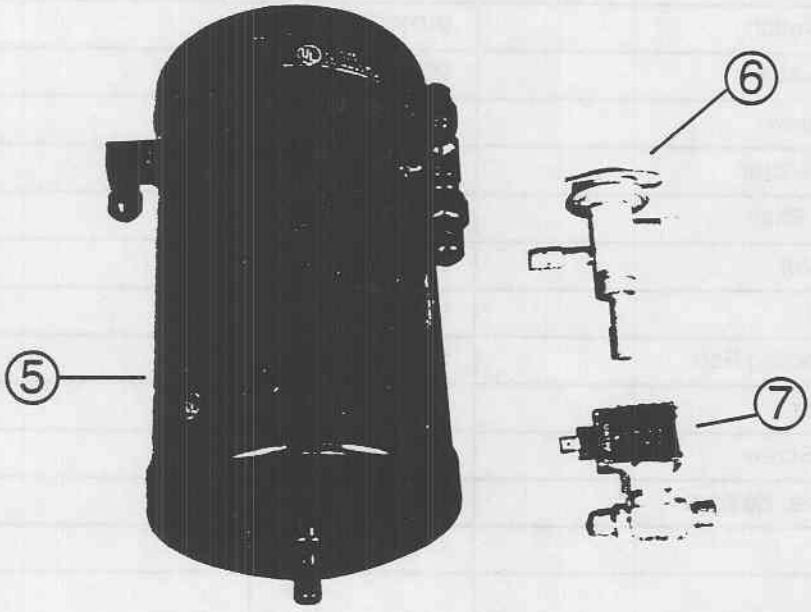
PARTS SECTION
PROBE ASSEMBLY SECTION



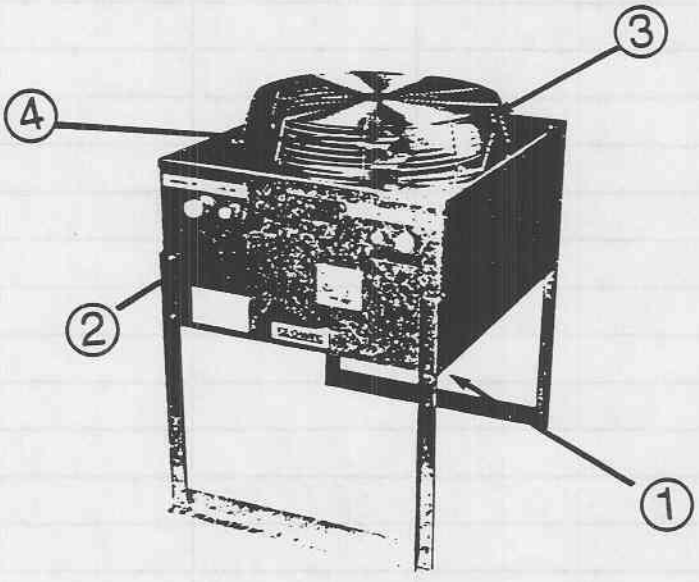
PARTS SECTION
PROBE ASSEMBLY

Index No.	Description	Part Number	Notes	C 20	C 40	C 50	C 61	C 25	C 45
1	Cam Switch	9101023-01		X	X	X	X	X	X
2	Clutch Assy.	2081035-03		X	X	X	X	X	X
2A	Set Screw	9031008-28	3/4"	X	X	X	X	X	X
3	Probe Motor	9161030-01		X	X	X	X		
4	Probe Shaft	9021053-01		X	X	X	X	X	X
5	Lock Nut	9031005-09		X	X	X	X	X	X
6	Swivel	9021017-01		X	X	X	X	X	X
7	Connecting Rod	9051057-01		X	X	X	X	X	X
8	Washer	9031003-03		X	X	X	X	X	X
9	Allen Screw	9031029-01		X	X	X	X	X	X
3	Probe Motor	9161031-01						X	X

PARTS SECTION
REMOTE COMPONENTS SECTION



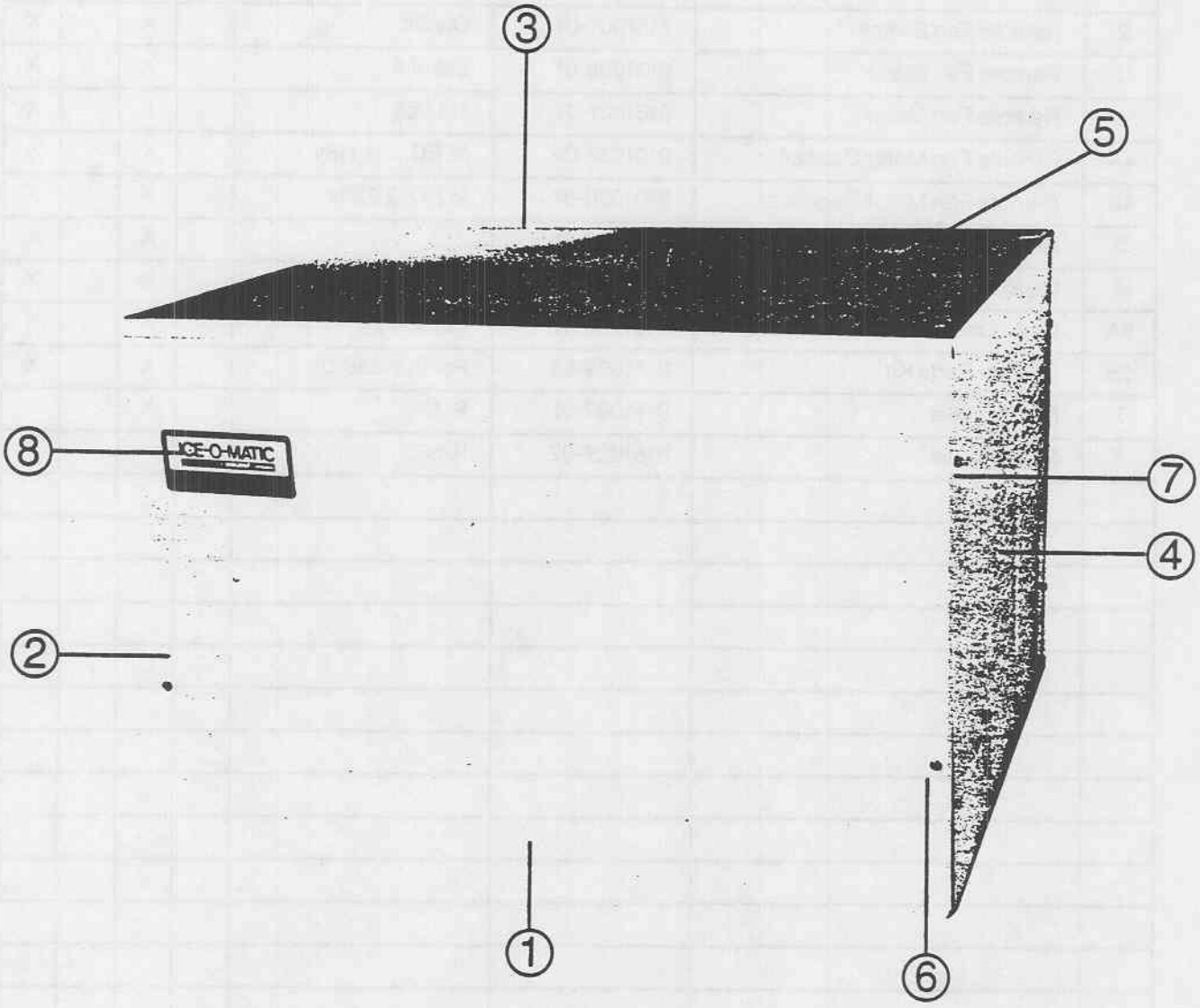
REMOTE CONDENSER



PARTS SECTION
REMOTE COMPONENTS

Index No.	Description	Part Number	Notes		C-40		C-61
1	Remote Condenser Coil	9141025-01	RC-40-2, RC-60-2		X		X
2	Remote Fan Switch	9101001-01	On/Off		X		X
3	Remote Fan Blade	9131006-01	Set of 4		X		X
4	Remote Fan Motor	9161001-01	115 Volt		X		X
4A	Remote Fan Motor Capacitor	9101036-02	M.F.D. 7.5 115v		X		X
4B	Remote Fan Motor Capacitor	9101036-01	M.F.D. 2 220v		X		X
5	Receiver	9151026-01			X		X
6	Liquid Line Pumpdown Solenoid Assy.	9151039-01			X		X
6A	Liquid Line Pumpdown Solenoid Coil	9151039-91	Coil Only		X		X
6B	Internal Parts Kit	9151039-93	For 9151039-01		X		X
7	Mixing Valve	9151027-01	R-12		X		
7	Mixing Valve	9151027-02	R-502				X

PARTS SECTION
PANELS SECTION



PARTS SECTION
PANELS

Index No.	Description	Part Number	Notes	C 20	C 40	C 50	C 61	C 25	C 45
1	Front Panel	3021376-01	Woodgrain	X	X		X		
	Front Panel	3021376-02	Stainless	X	X		X	X	X
	Front Panel	2031335-01	Plastic			X		X	X
2	Left Hand Side Panel	3021378-03	Painted-No Louvers	X	X	X	X	X	X
	Left Hand Side Panel	3021378-04	Stainless-No Louvers	X	X	X	X	X	X
3	Rear Panel	3021377-01	Painted	X	X	X	X	X	X
4	Right Hand Side Panel	3021378-01	Painted Louvered	X	X	X	X	X	X
	Right Hand Side Panel	3021378-02	Stainless-Louvered	X	X	X	X	X	X
5	Top Panel	3021375-01	Painted	X	X	X	X	X	X
	Top Panel	3021375-02	Stainless	X	X	X	X	X	X
6	Panel Screws	9031074-02	Front Panel	X	X	X	X	X	X
7	Panel Screws	9031074-01	Side, Back, Top	X	X	X	X	X	X
8	Logo	9051189-01				X			
8A	Logo	9071023-02		X	X		X	X	X

MILE HIGH EQUIPMENT COMPANY
MFG. PART NUMBER CROSS REFERENCE

PAGE	INDEX NO.	MILE HIGH EQUIP. PART NR.	MANUFACTURER PART NR.	MANUFACTURER
F-3	1	9131180-01	RM292-7	ROBERTS MFG.
F-3	2	9161076-02	MH1-4EJFA	BECKETT
F-3	10	9041051-02	MG21-2646	ROBERT SHAW
F-3	10	9041051-01	MG21-2645	ROBERT SHAW
F-5	1	9151053-02	71255A75758	JACKES EVANS
F-5	2	9151006-01	Y858-NIR1/2	SPORLAN
F-5	2	9151020-01	226-084	EATON CONTROLS
F-5	3	9041053-02	10095-51	DELTROL
F-5	4	9181001-92	RSH2-0050-IAZ-712	COPELAND
F-5	4	9181061-02	SC15A	DANFOSS
F-5	4	9181054-92	RSN4-0075-PAZ-704	COPELAND
F-5	6A	9161077-02	SPBEP9C3007A	MORRILL MOTORS
F-5	6A	9131053-02	FF100CW24P	ELECRIC MOTORS
F-5	6A	9131054-01	L5954T6	ELECRIC MOTORS
F-5	6A	9161077-02	ESPBEP9C3007A	MORRILL MOTORS
F-5	6A	9161045-06	ESPL16EM251	ELECRIC MOTORS
F-5	6A	9161078-02	ESPL35EM25	ELECRIC MOTORS
F-5	7	9151004-02	CG032-S	SPORLAN
F-7	9	9101002-04	A77-306651A-2	JOSYLN CLARK
F-7	10	9181061-61	117U5021	DANFOSS
F-7	2A	9041054-01	G20-4132-00	RANCO
F-7	3	9101084-02	RH2BUAC240	IDEC
F-7	7	9181004-09	117U6003	DANFOSS
F-7	7	9181004-07	040-0088-03	COPELAND
F-7	10	9181003-02	014-0008-70	COPELAND
F-7	11	9181009-06	014-0037-13	COPELAND
F-9	1	9101023-01	BZ-3RW8255512T	MICRO SWITCH
F-9	3	9161031-01	82344-566	CROUZET

All other items are manufactured by Mile High Equipment Co. or are proprietary items of Mile High Equipment Co.

MANUFACTURERS ADDRESS

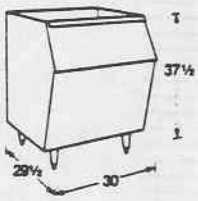
BECKETT CO.	2521 WILLOWBROOK DALLAS,TX. 75220
COPELAND	1675 W.CAMPBELL RD. SIDNEY OH. 45365
CROUZET	1029 STATE PKWY. SCHAUMBURG,IL. 60295
DANFOSS	16 McKEE DR. MAHWAH,N.J. 07430
DELTROL	2745 S.19th. ST. MILWAUKEE,WI. 53215
EATON CORP.	191 E.NORTH AVE. CAROL STREAM,IL. 60188
ELEC.MOTORS	KING & HAMPSHIRE GARRETT,IN. 46805
IDEC	3795 B PARIS ST. DENVER,CO. 80239
JACKES-EVANS	P.O. BOX 130 MADISON,MO. 63160
JOSLYN CLARK	RTE 4 ROCKHILL HWY. LANCASTER,S.C. 29720
MICRO SWITCH	600-108th AVE.N.E. BELLEVUE,WA. 98004
MORRILL MOTORS	3685 NORTHRUP FT.WAYNE,IN. 46805
RANCO CONTROLS	P.O. BOX 145 PLAIN CITY.OH. 43064
ROBERT SHAW	NEW STANTON DIV. YOUNGWOOD,PA. 15697
SPORLAN	7525 SUSSEX AVE. ST.LOUIS,MO. 63160

ICE-O-MATIC®

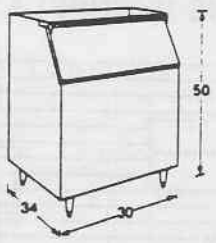
A **WELBILT** Company

STORAGE BIN
MODEL B

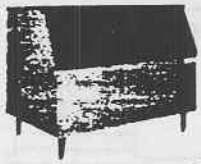
B-20
170 lb. Bin

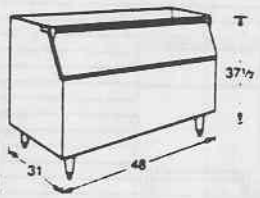


B-40
365 lb. Bin

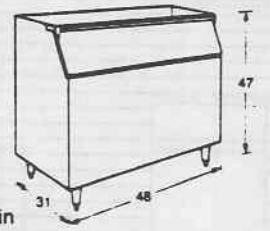


B-55
550 lb. Bin

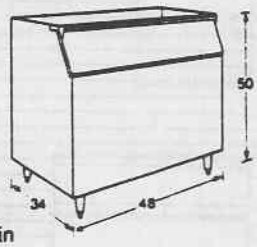




B-60
580 lb. Bin



B-80
800 lb. Bin



B-100
1000 lb. Bin

MODEL B
Storage Bin

Foamed-in-place polyurethane insulated ice storage bin...storage capacity from 170 to 1000 pounds.

Dependable storage for either Cubes or Flakes.

Use with Model C Cubers or Model MF Flakers.

OPTIONS:

Stainless Steel Cabinet
Bin Top

BIN CONSTRUCTION:

To be insulated on all sides and bottom with foamed-in-place polyurethane. To have non-corrosive bin liner, stainless steel insulated door,* and 6 to 7 inch adjustable NSF approved legs. Bin drain to be located at rear of cabinet.** To have a **2 year parts warranty.** To have **a 2 year labor warranty on major components and a 1 year labor warranty on all other components.**

* Models B-55-P, B-60-P, B-80-P and B-100-P, to have ABS plastic door.

** Models B-55-P, B-60-P, B-80-P and B-100-P, to have dual drain for bottom or rear drain connection.

ORDERING INFORMATION:

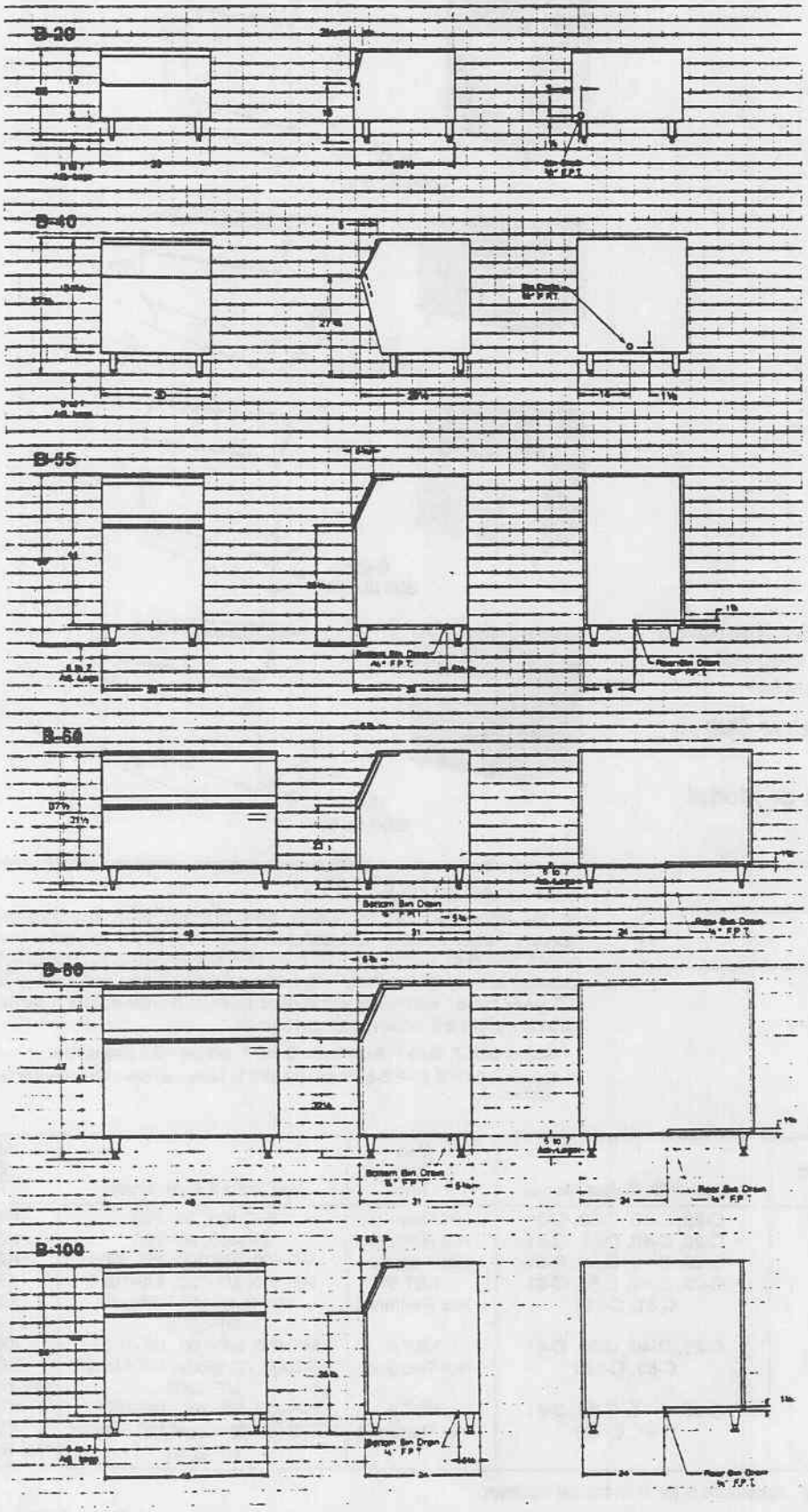
Model Number	Bin Storage Lbs.*	Shipping Wt.	Use with Cuber Model	Use Bin Top	Use with Flaker Model	Use Bin Top
B-20-P	170	85	C-20, C-40, C-50, C-61	Not Required	MF-400, MF-700	KBT-2
B-40-P	365	110	C-20, C-40, C-50, C-61	Not Required	MF-400, MF-700	KBT-2
B-55-P	550	180	C-20, C-40, C-50, C-61	Not Required	MF-400, MF-700, MF-1006	KBT-2
B-60-P	580	185	C-20, C-40, C-50, C-61	KBT-5	MF-400, MF-700, MF-1006	KBT-1
			C-81, C-121	Not Required	(2) Model MF Flakers MF-2006	KBT-3 Not Required
B-80-P	800	225	C-20, C-40, C-50, C-61	KBT-5	MF-400, MF-700, MF-1006,	KBT-1
			C-81, C-121	Not Required	MF-2006, (2) Model MF Flakers MF-2006	KBT-3 Not Required
B-100-P	1000	245	C-20, C-40, C-50, C-61	KBT-5	MF-400, MF-700, MF-1006,	KBT-1
			C-81, C-121	Not Required	MF-2006, (2) Model MF Flakers MF-2006	KBT-3 Not Required

To specify Optional Stainless Steel Cabinet, substitute **S** for **P** in Model Number.

* The storage capacity of the bin is a maximum rating according to ARI standards. It is based on the volume of the bin x 90% x 34 lbs. per cubic foot as the average density of ice in a bin.

STORAGE BIN, Model B

DIMENSIONS (INCHES) & CONNECTIONS DIAGRAM:



BIN TOPS:

KBT-1
Bin Top for: B-60, B-80, B-100 with MF Flaker

KBT-2
Bin Top for: B-20, B-40, B-55 with MF Flaker

KBT-3
Bin Top for: B-60, B-80, B-100 with (2) MF Flakers

KBT-5
Bin Top for: B-60, B-80, B-100 with Model B C-20, C-40, C-50, C-61 Cube

ICE-O-MATIC
WELBILT
11100 East 45th Avenue. Denver, CO 80239
303/371-3737. TLX 386453. FAX 303/371-6296

We reserve the right to make changes in design and construction at any time without obligation.
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